

# THE URBAN BAYOU

Daniel G. Raymond / A+U Dual Degree / P5 Presentation / June 28, 2011

UNDERSTANDING THE DELTA & CITY

# THE URBAN BAYOU

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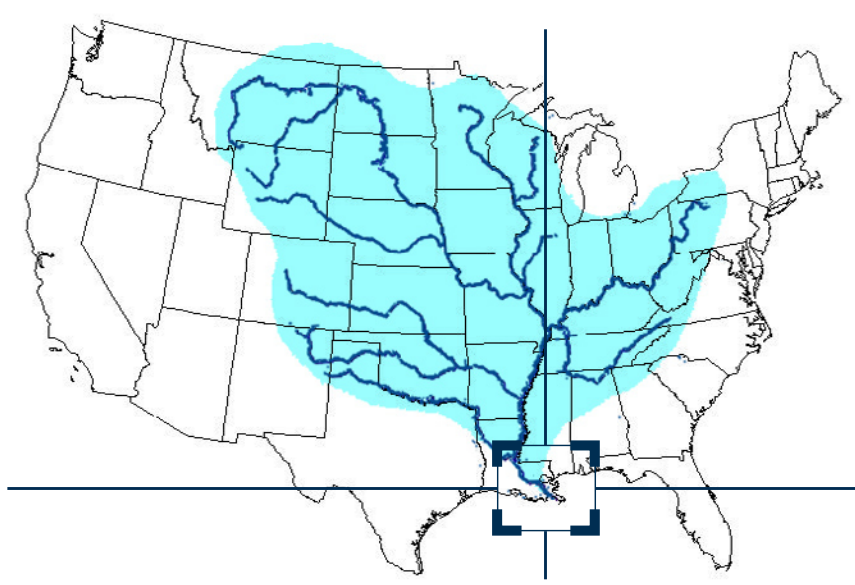
NEIGHBORHOOD CULTURAL CENTER

## PROJECT LOCATION

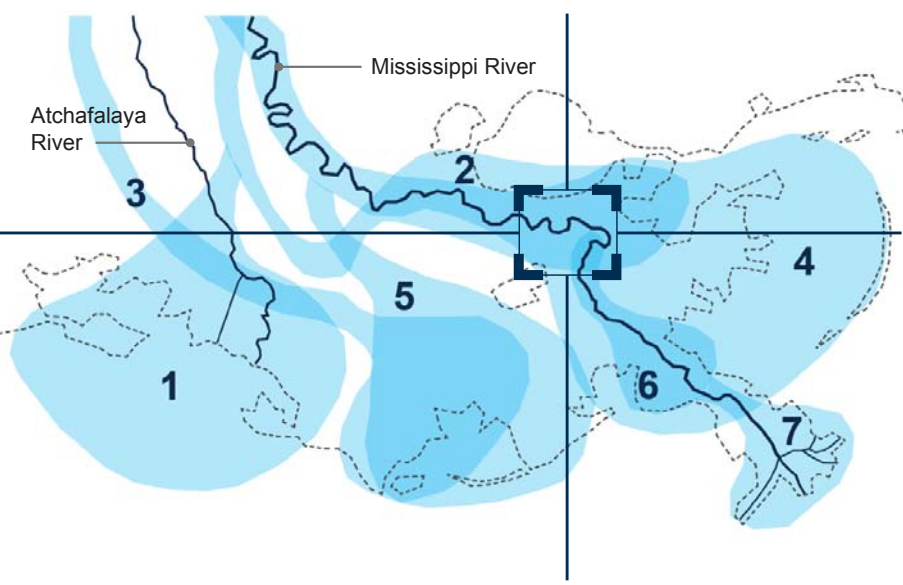
GLOBAL DELTAS



MISSISSIPPI DRAINAGE BASIN



HISTORICAL DELTA LOBES

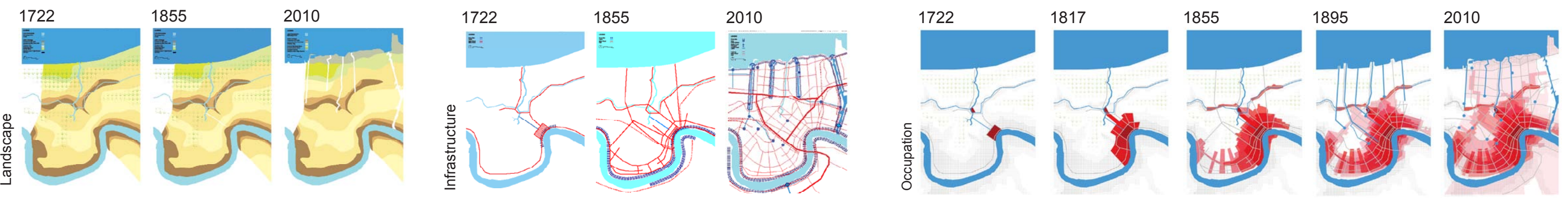


## 3x3x3 ANALYSIS

DELTA SCALE



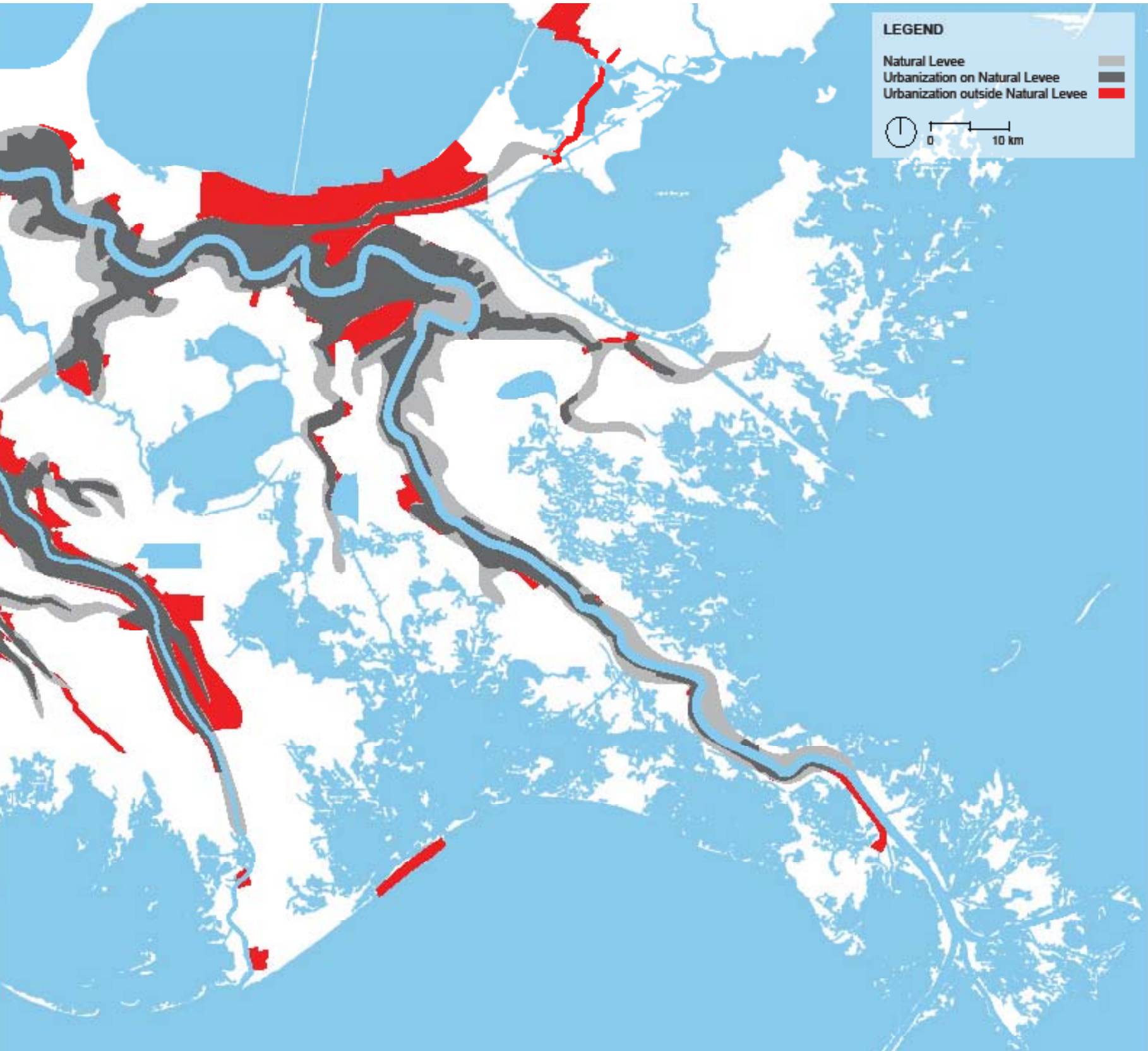
CITY SCALE



## 3x3x3 CONCLUSIONS

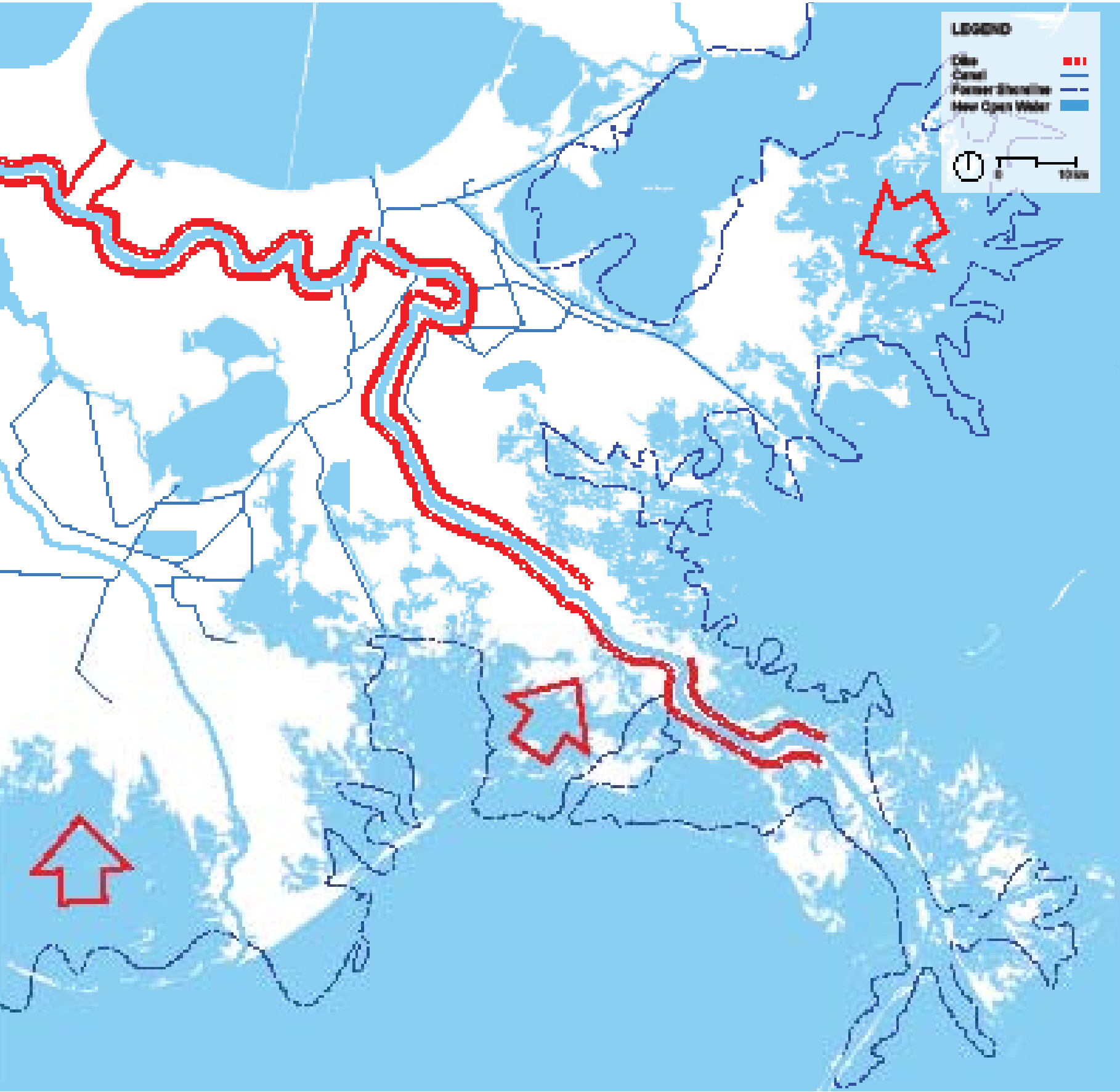
NATURAL LEVEES IN THE DELTA

Landscape + Occupation



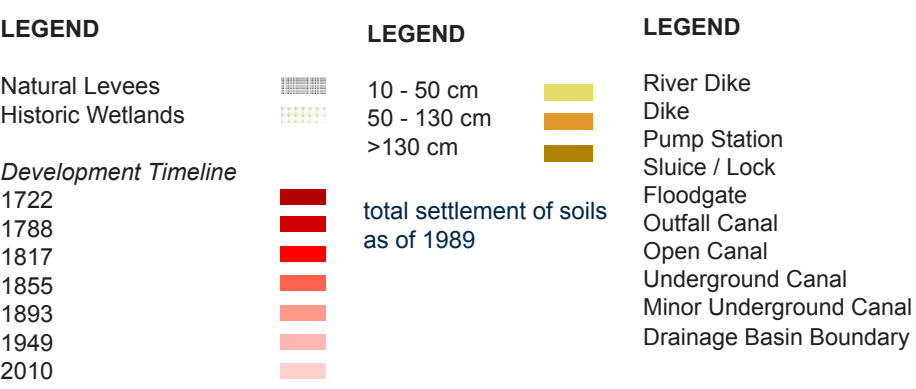
LAND LOSS IN THE DELTA

Landscape + Infrastructure



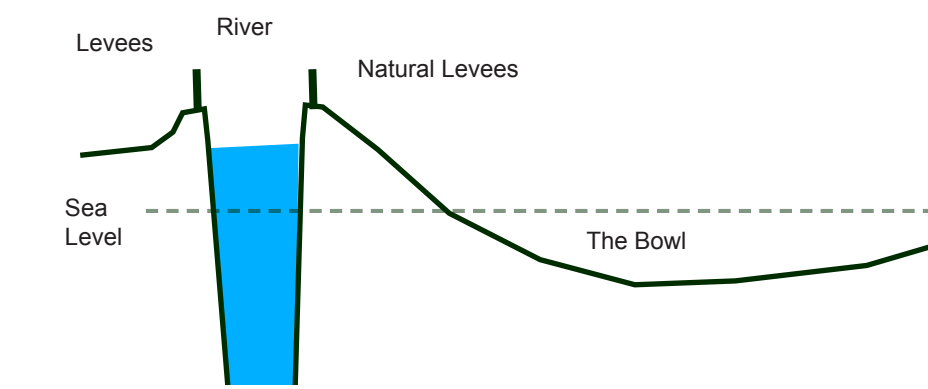
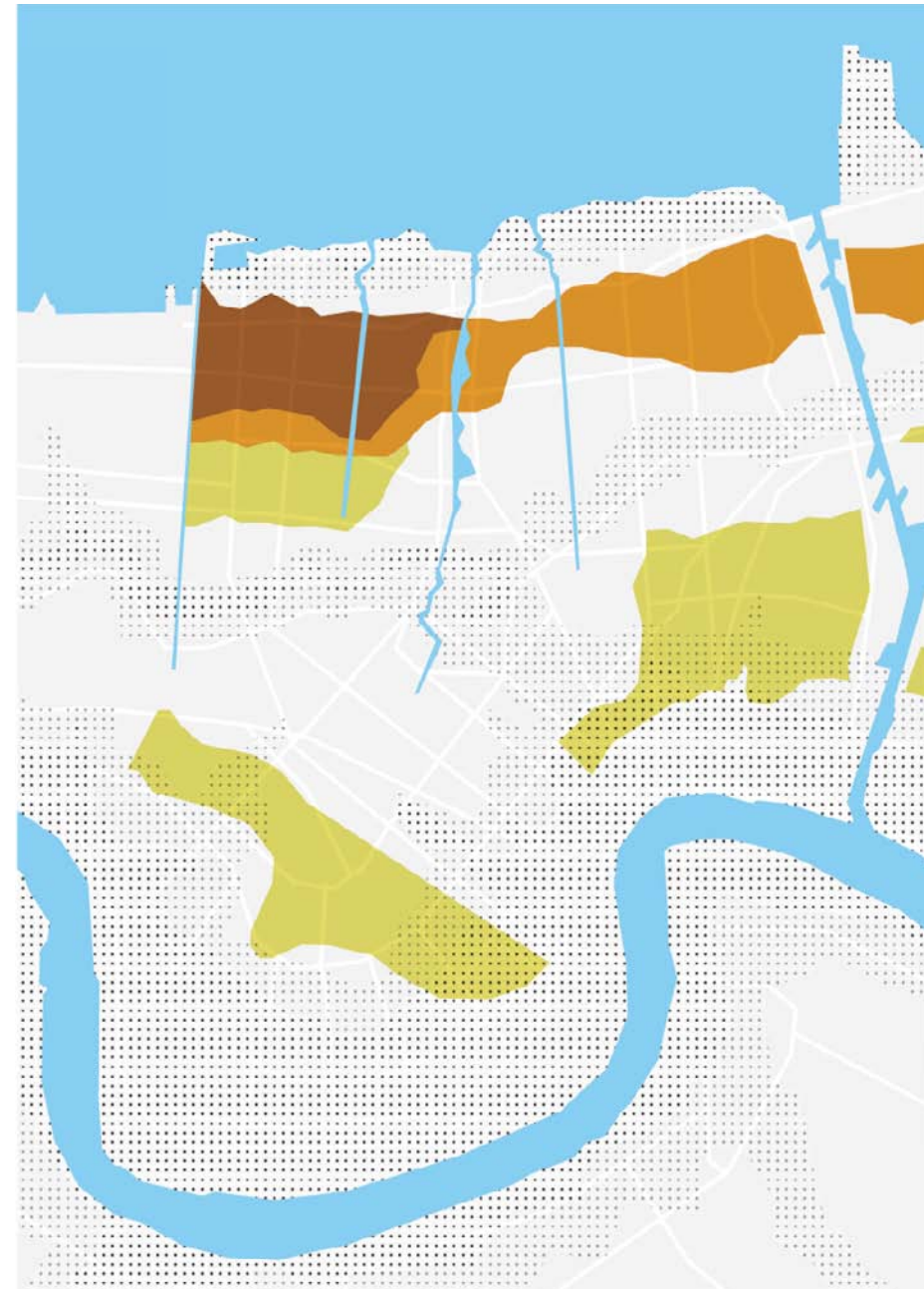
NATURAL LEVEES IN THE CITY

Landscape + Occupation



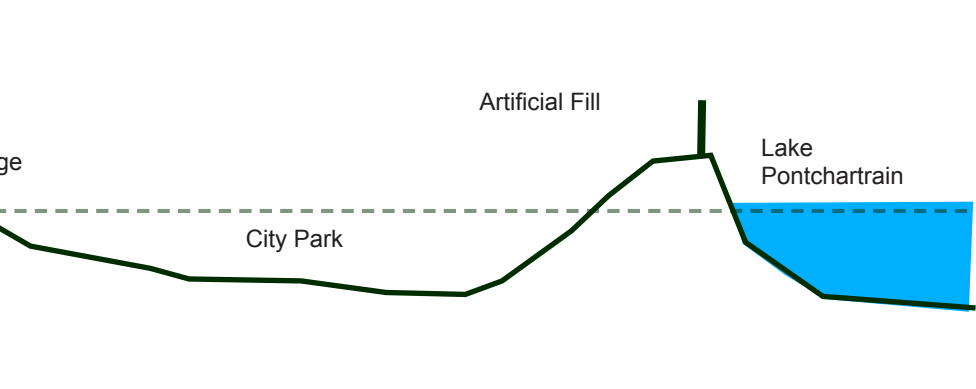
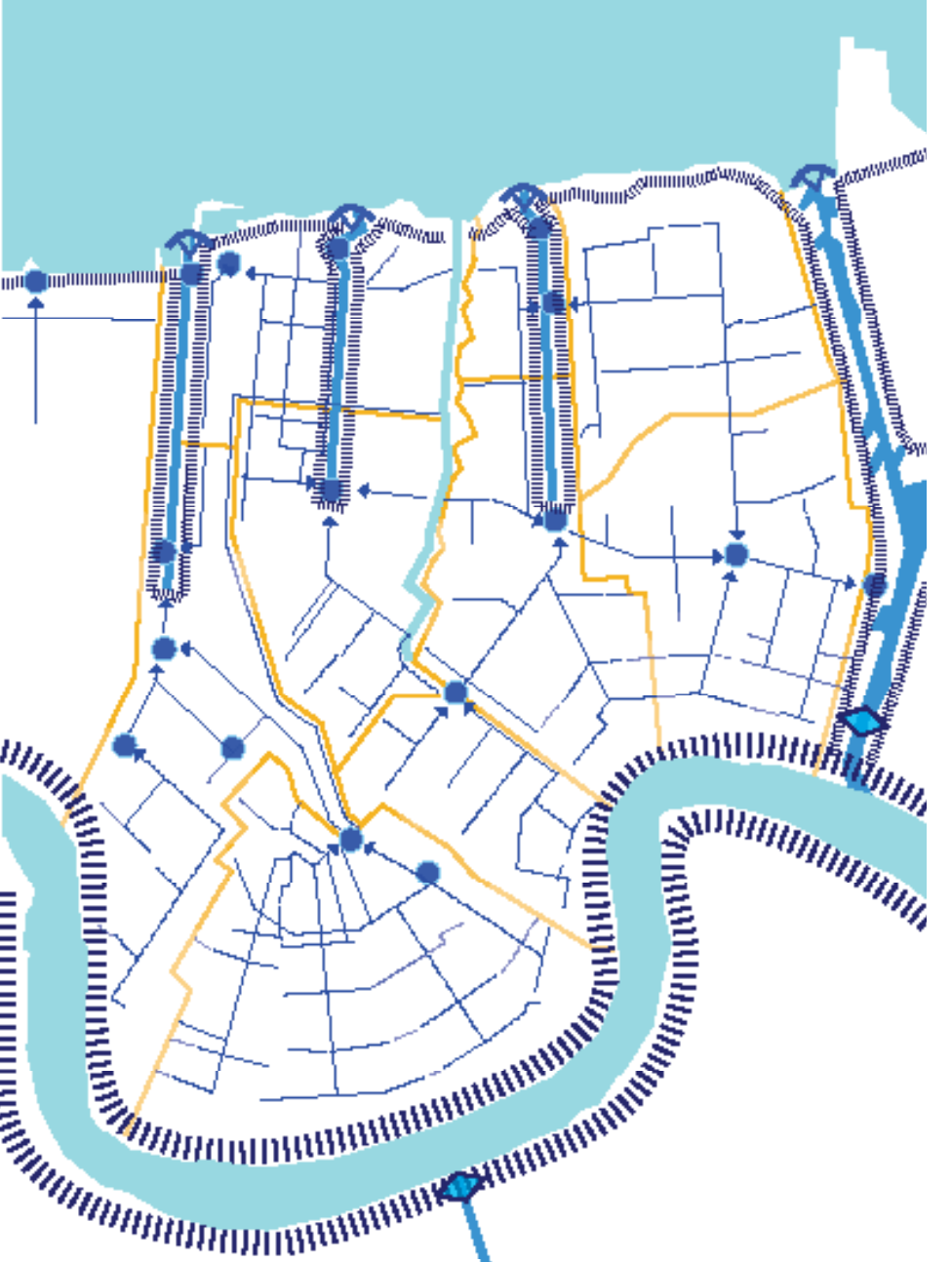
SINKING LAND IN THE CITY

Landscape + Occupation



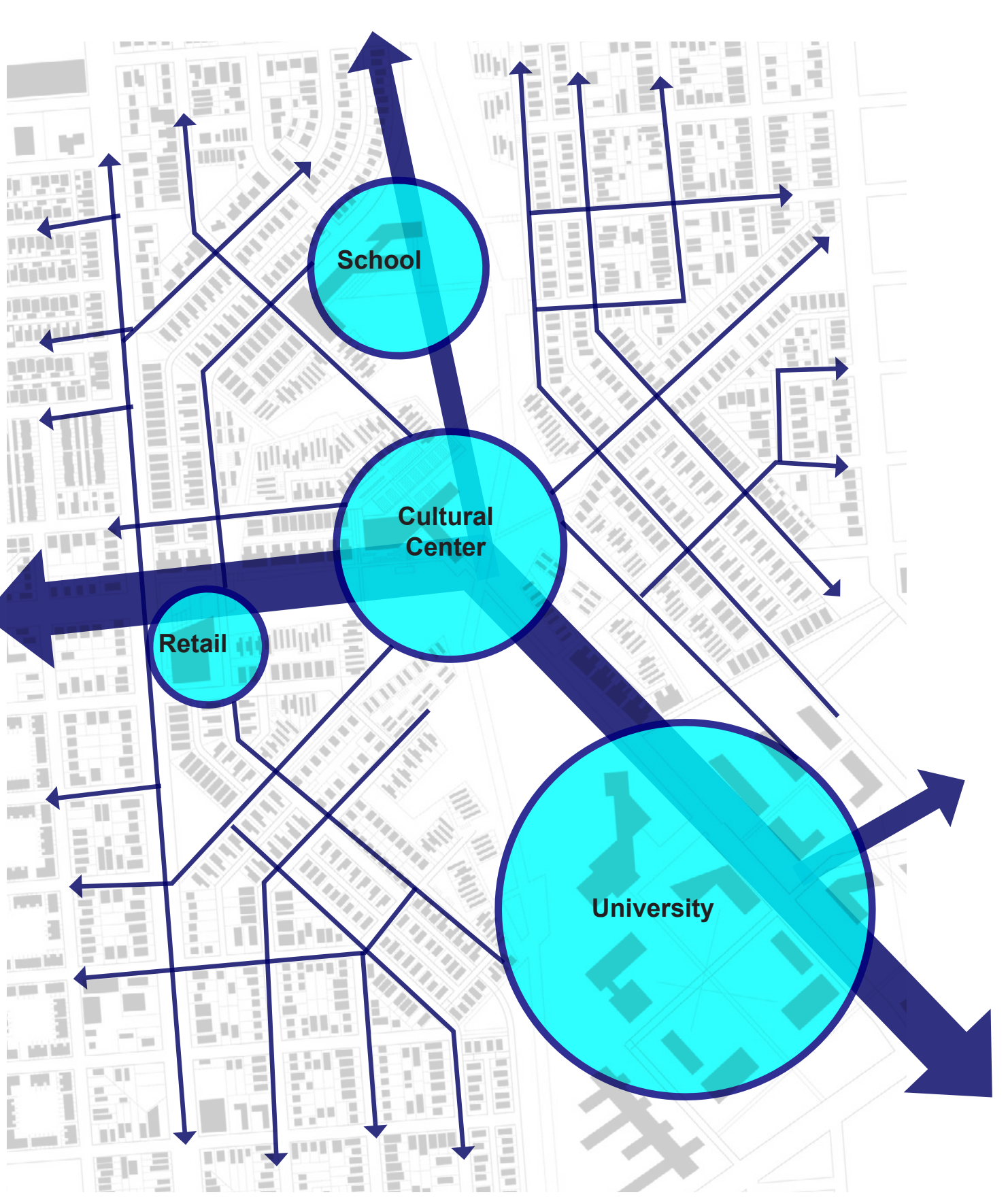
INCREASING INFRASTRUCTURE

Infrastructure + Occupation

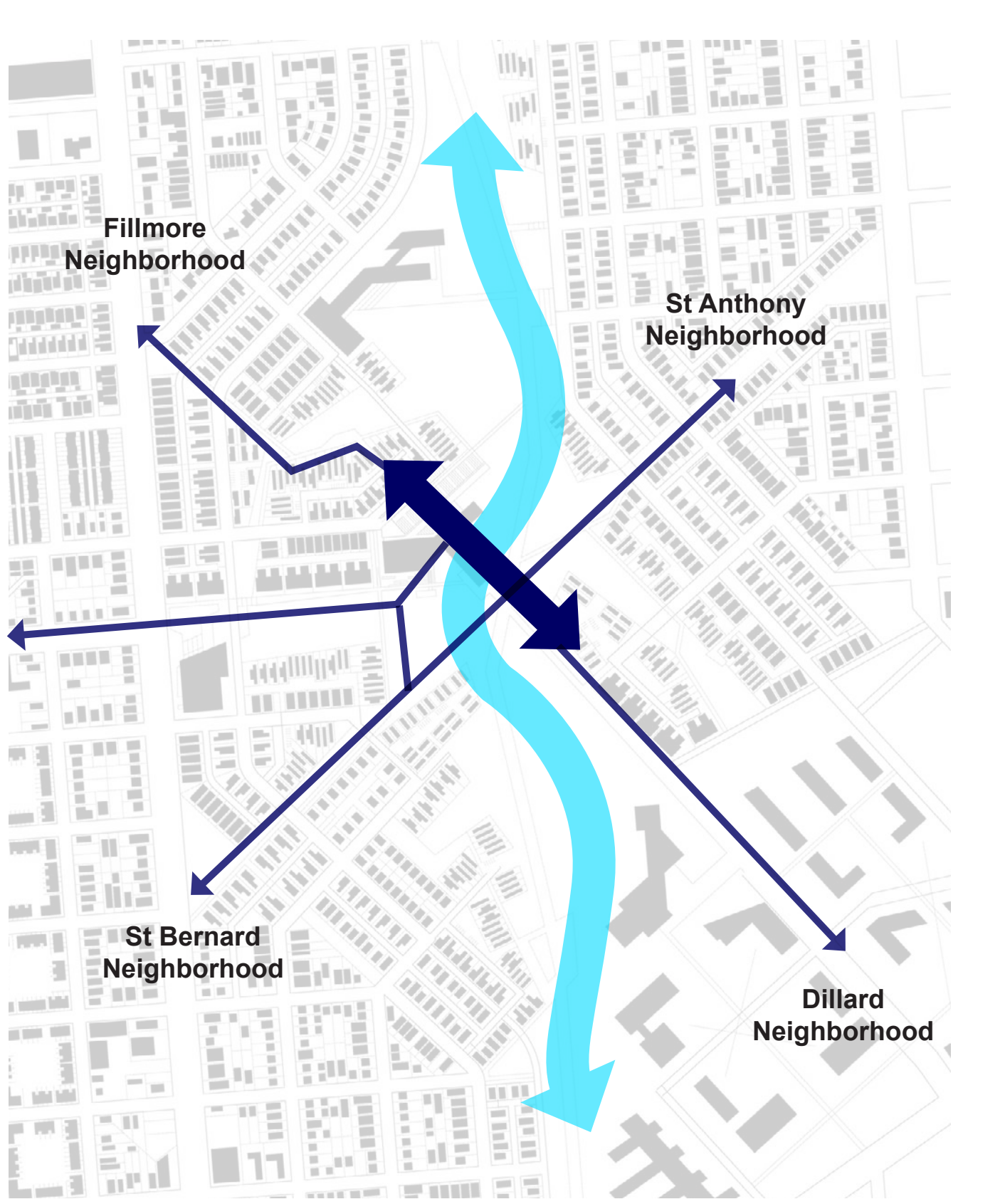


## POSITION OF BUILDING

Hinge + Merging Grids



Bridging Neighborhoods



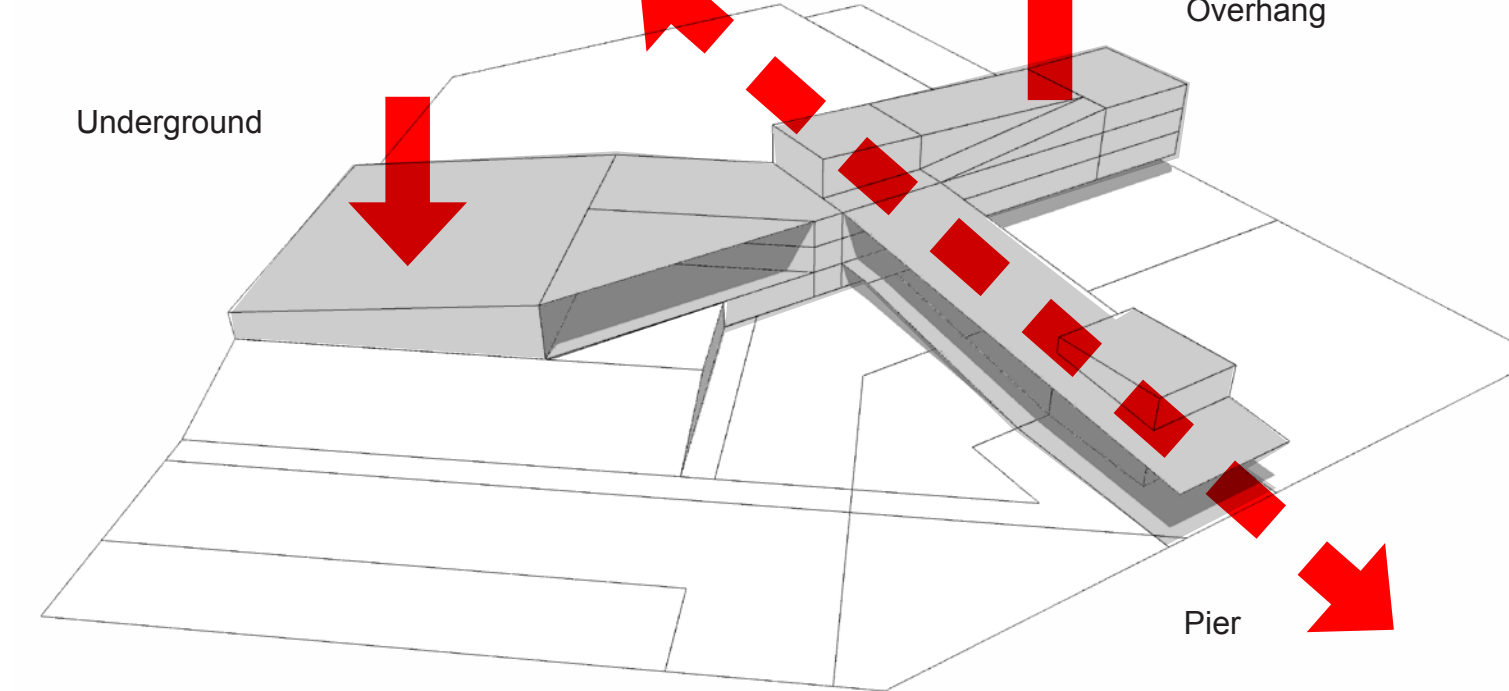
## SITE PLAN

Scale: 1:1000

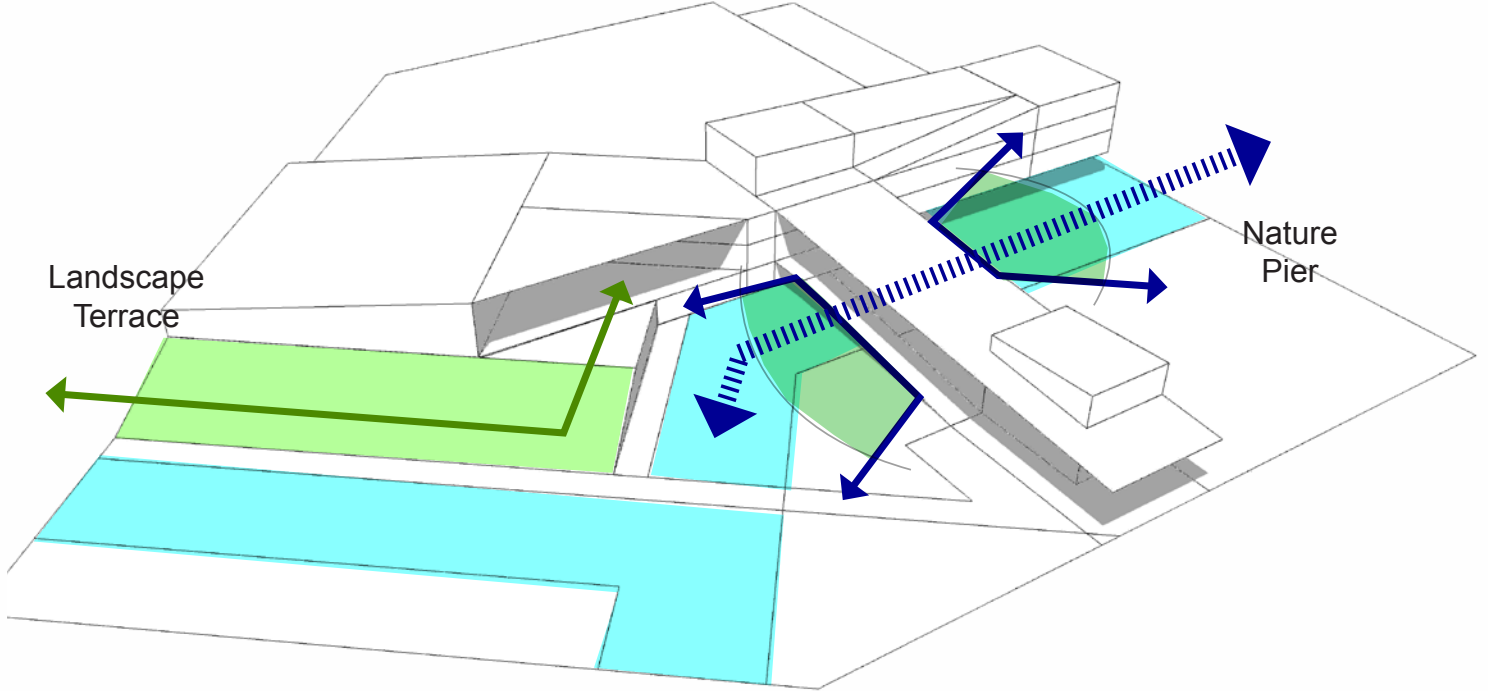


## BUILDING CONCEPTS

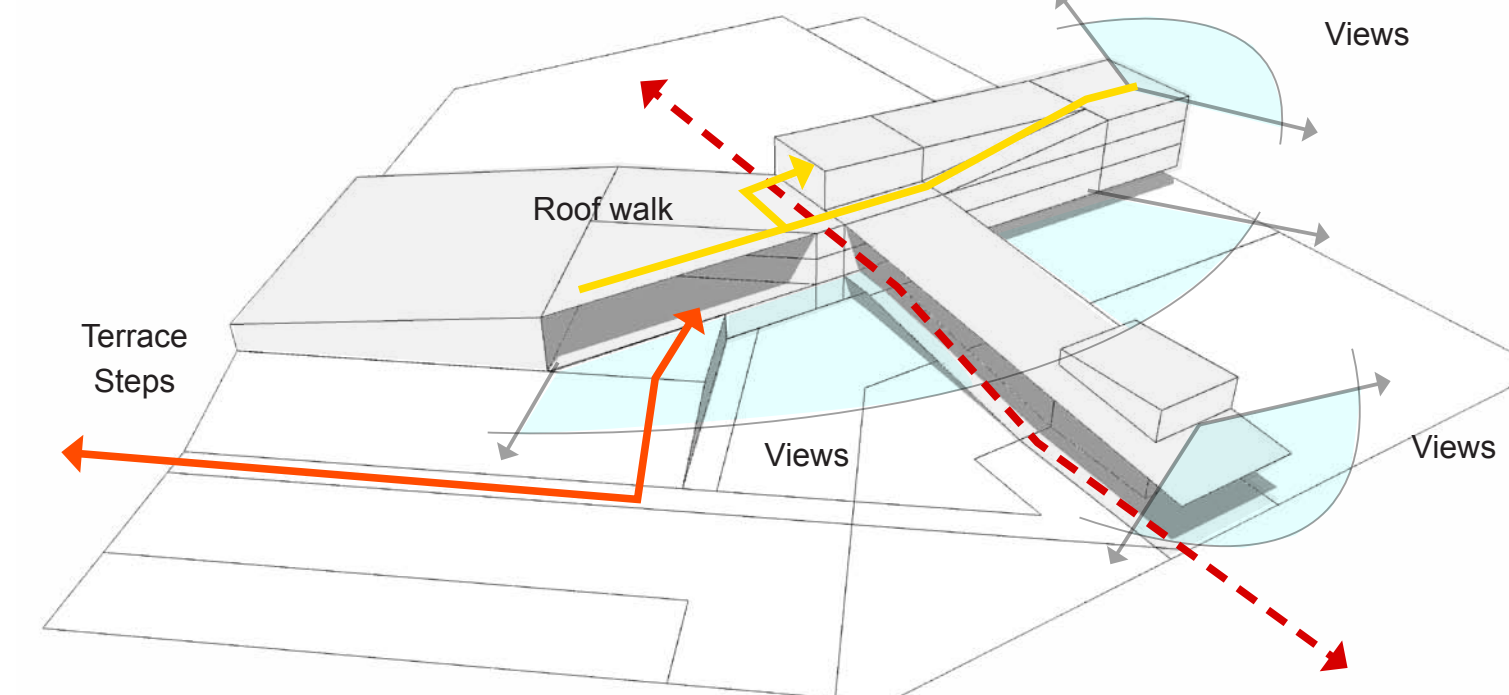
TECTONICS



LANDSCAPE

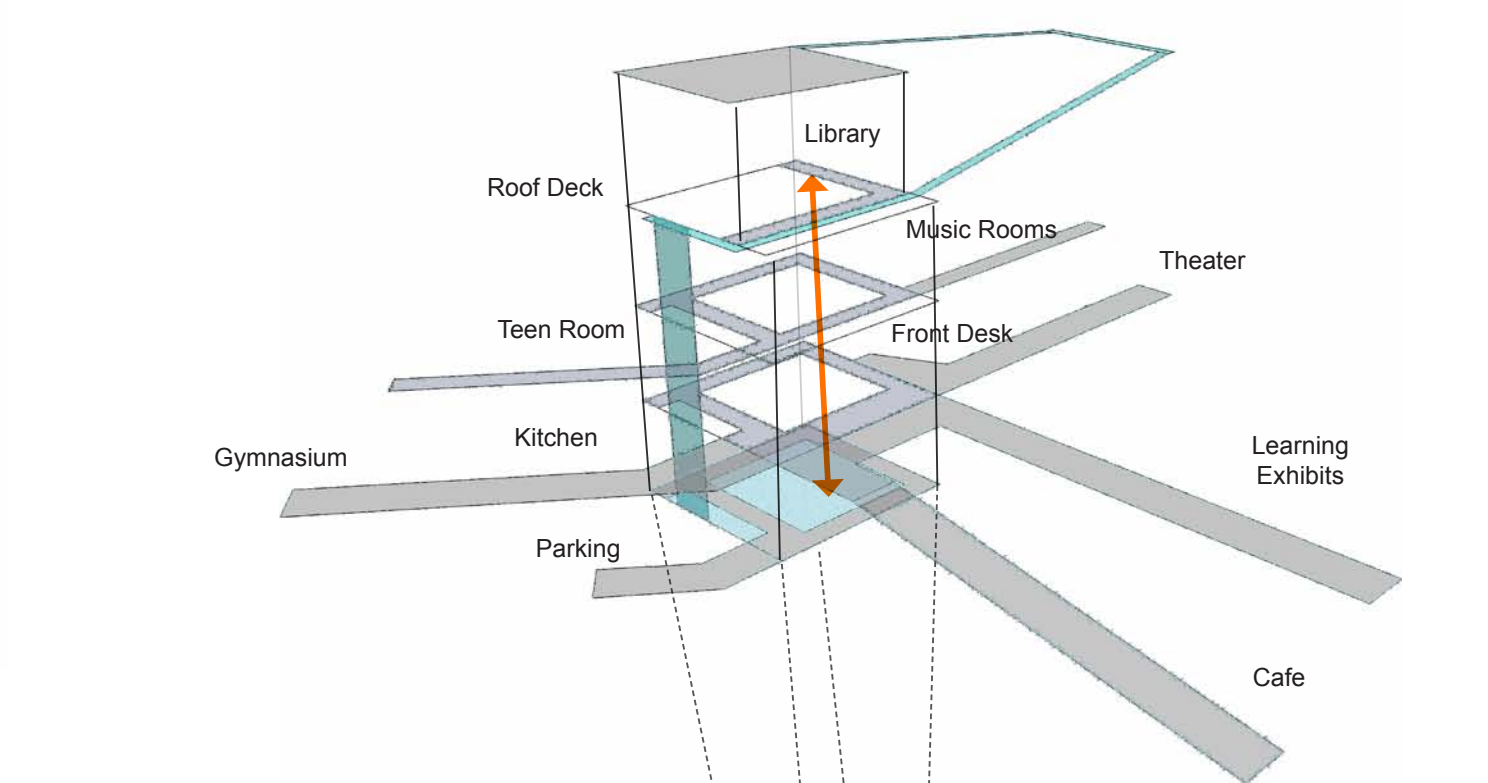


MOVEMENT & VIEWS

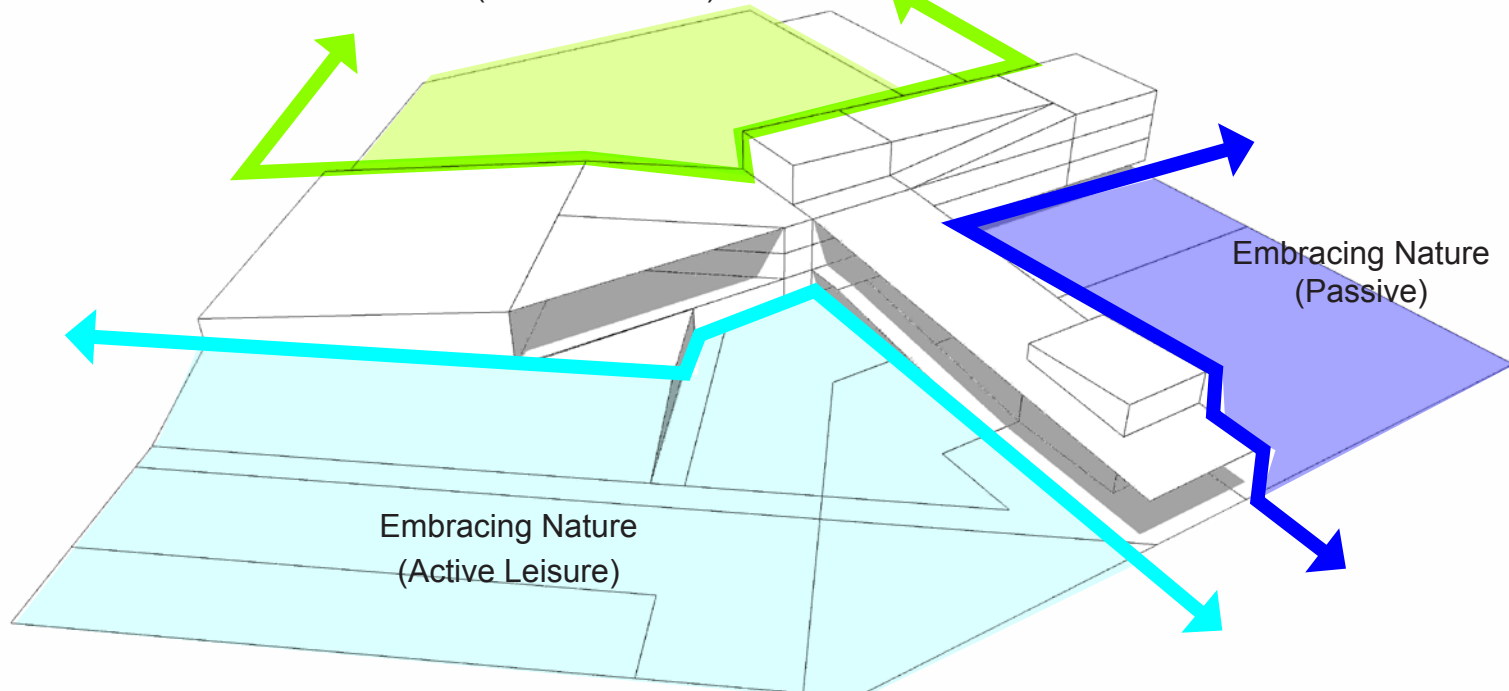


ATRIUM

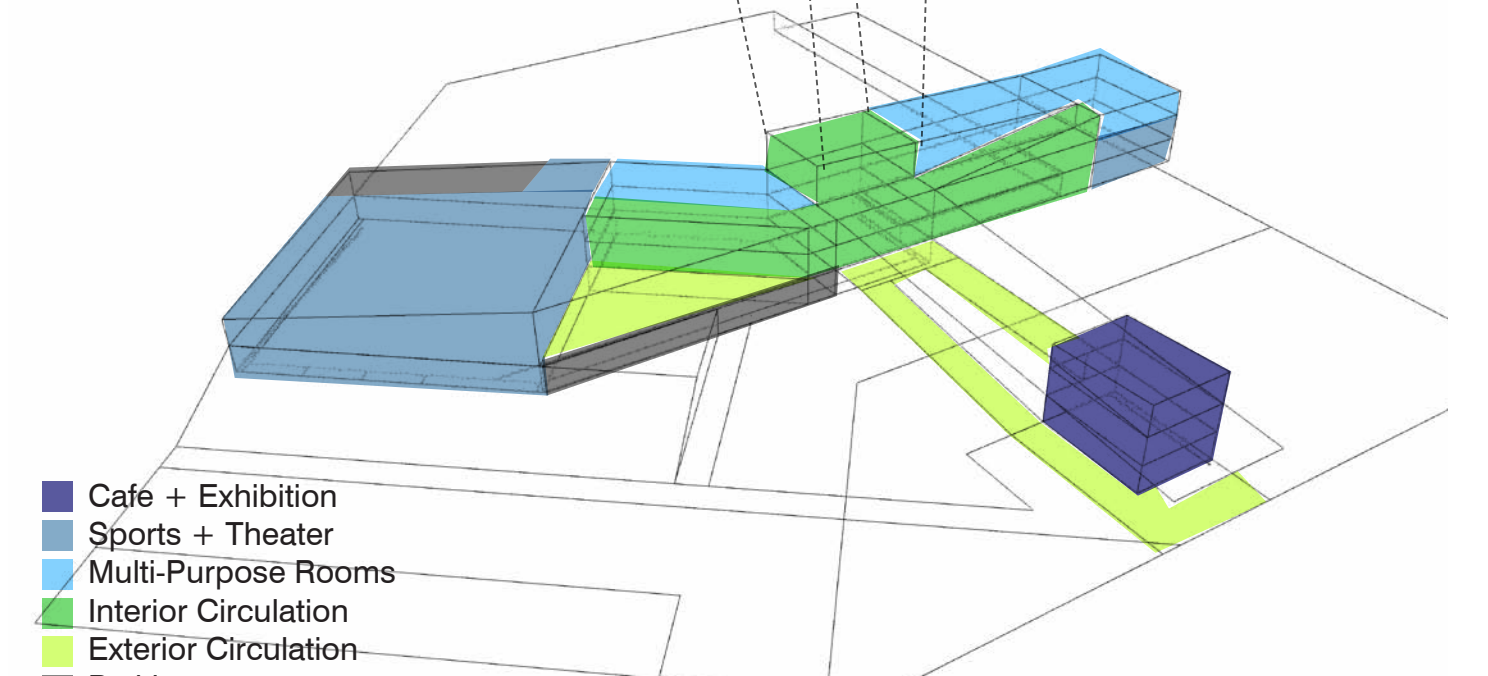
Central Circulation Pivot Point



ZONES



PROGRAM DISTRIBUTION





# THE URBAN BAYOU / Solving the Canals

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Mississippi River

New Orleans

## CITY WATER STRATEGY

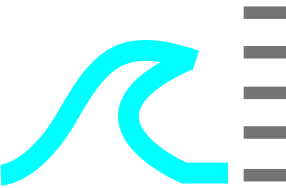
### CITY WATER STRATEGY

#### LEGEND

- Brackish Water
- Canal
- Swale
- Rain Garden
- Natural Dike Edge
- Natural Fluctuation
- Overflow Channel
- Emergency Pump



**THREAT:**  
heavy rains, storm water  
flooding, lack of storage  
capacity



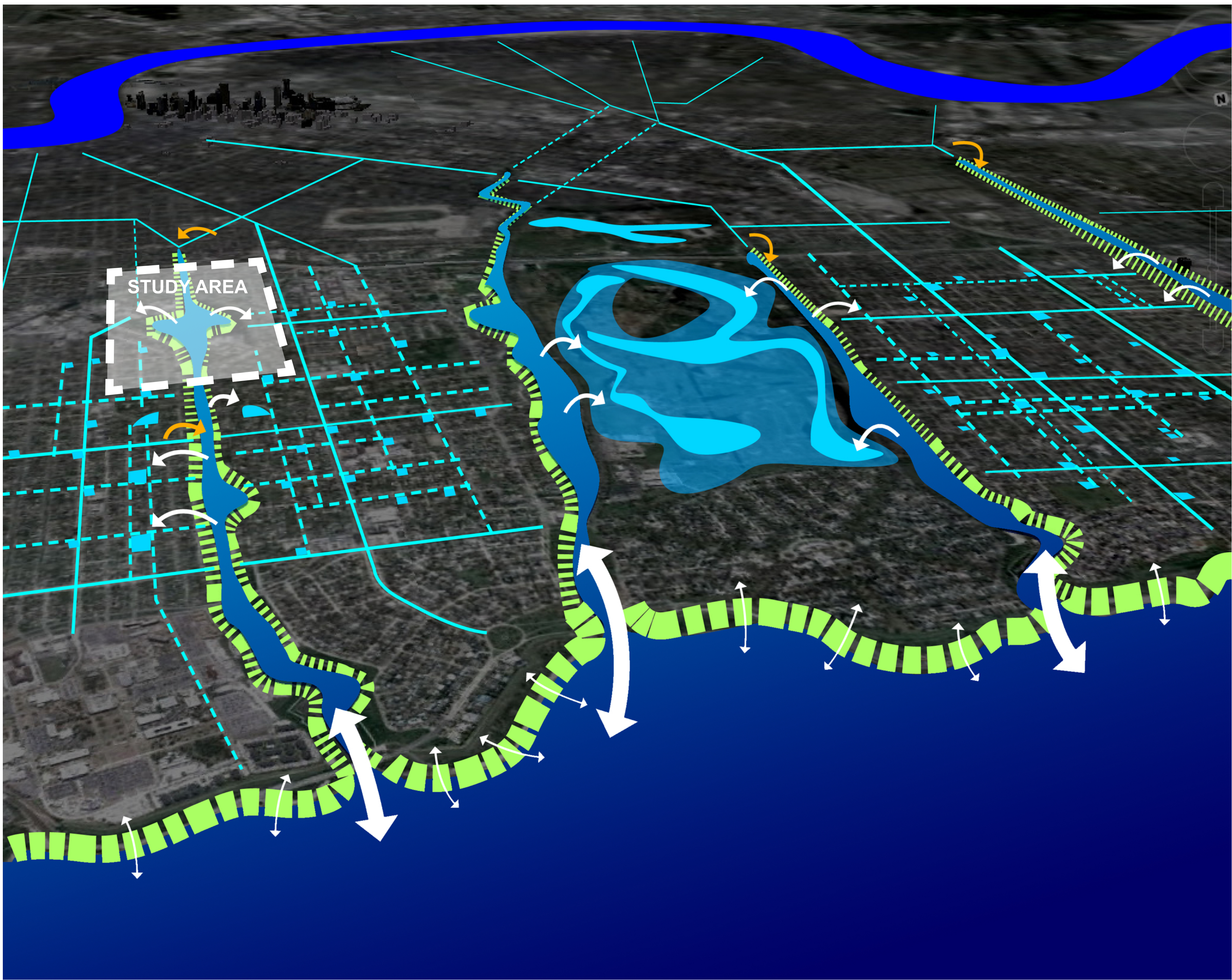
**THREAT:**  
storm surges & sea level  
rise via the lake

**vascular network**  
street swales, canals & ponds to store and infiltrate  
rain water

**strategic overflow channels**  
during peak storm surges bayous can overflow and  
be accommodated in vascular network

**open connection to lake**  
natural marsh and swamp environments including  
tides and water fluctuations

**soft edge along lake front**  
swamps, cypress forests, buffer from storm surges



### MODIFIED BOULEVARD CANAL STREET



### MODIFIED NEIGHBORHOOD SWALE STREET

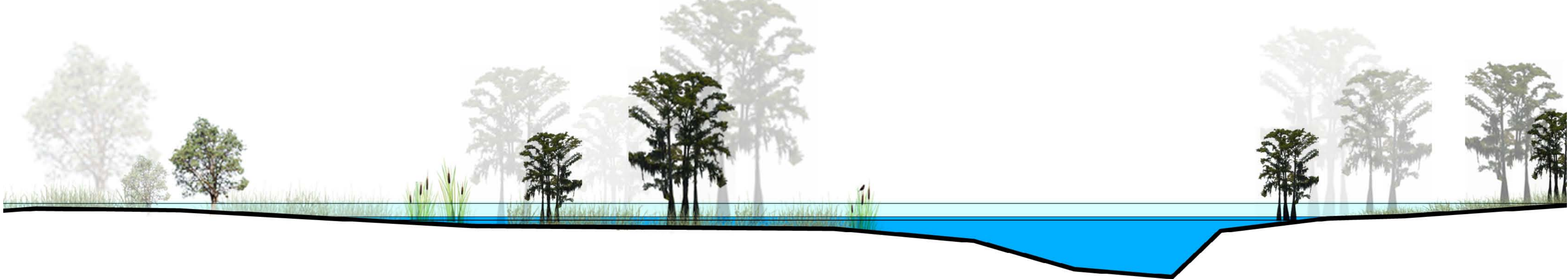
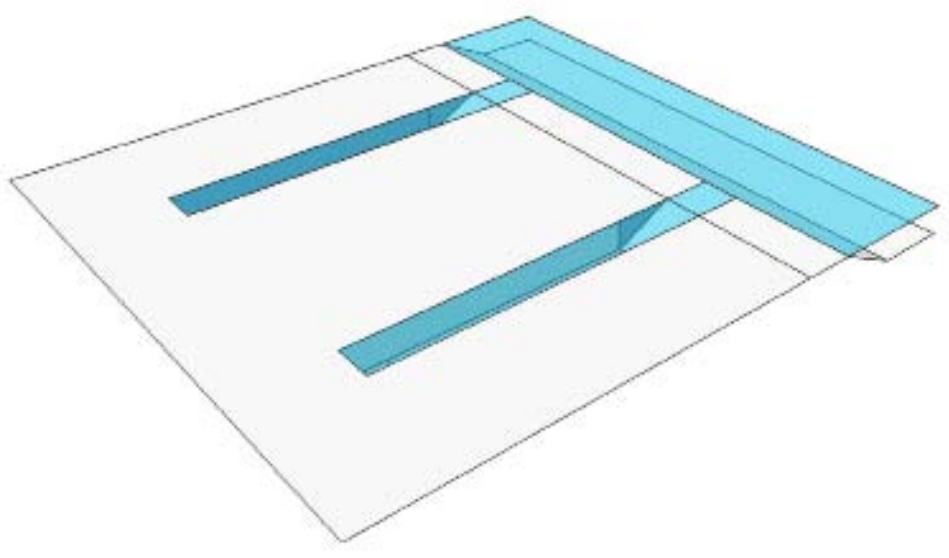


### Proposed City Water Strategy

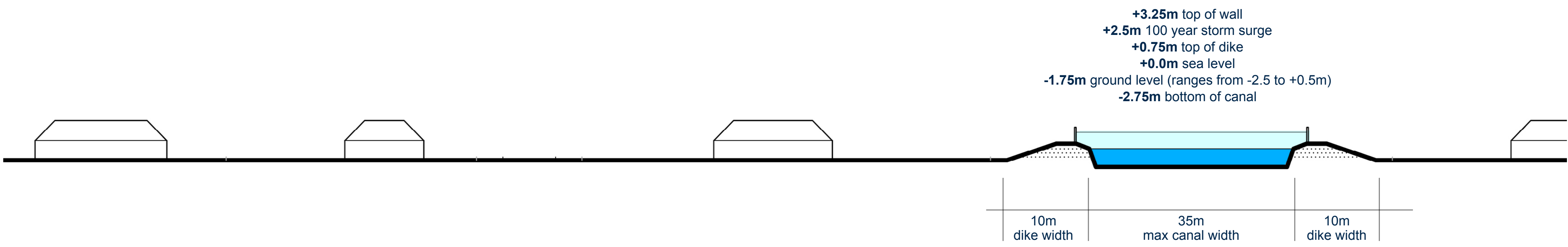
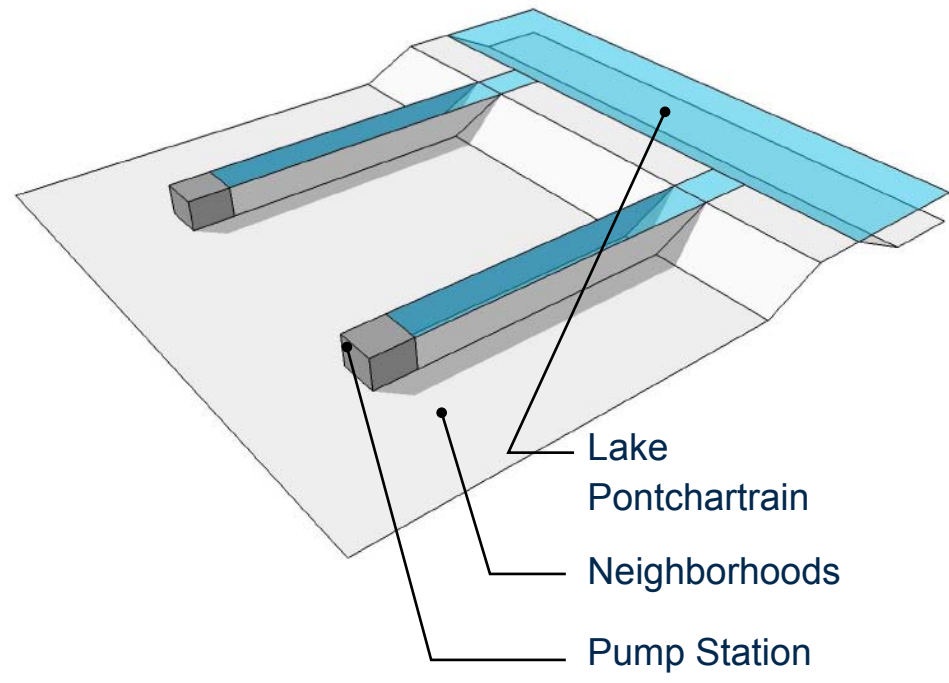


## OUTFALL CANALS

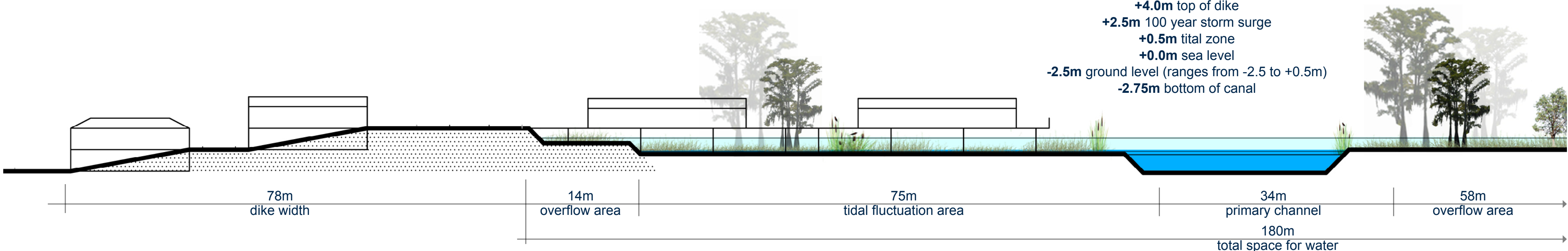
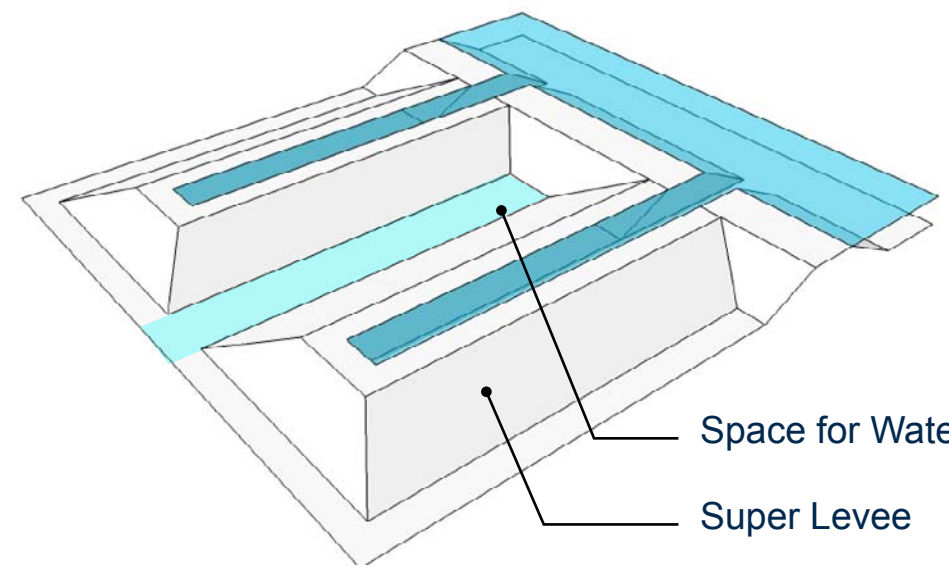
### Historical Bayou St John



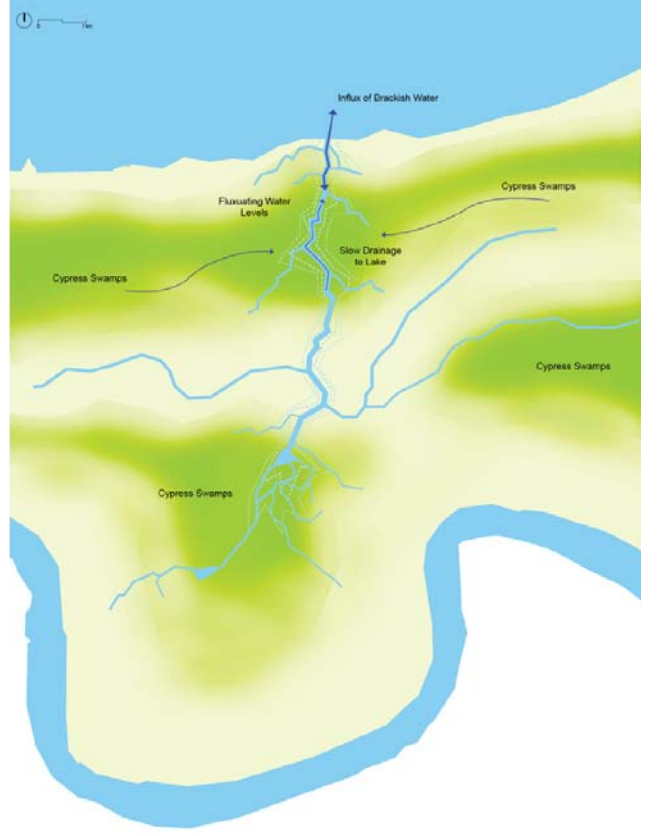
### Typical Outfall Canal



### Proposed Outfall Canal



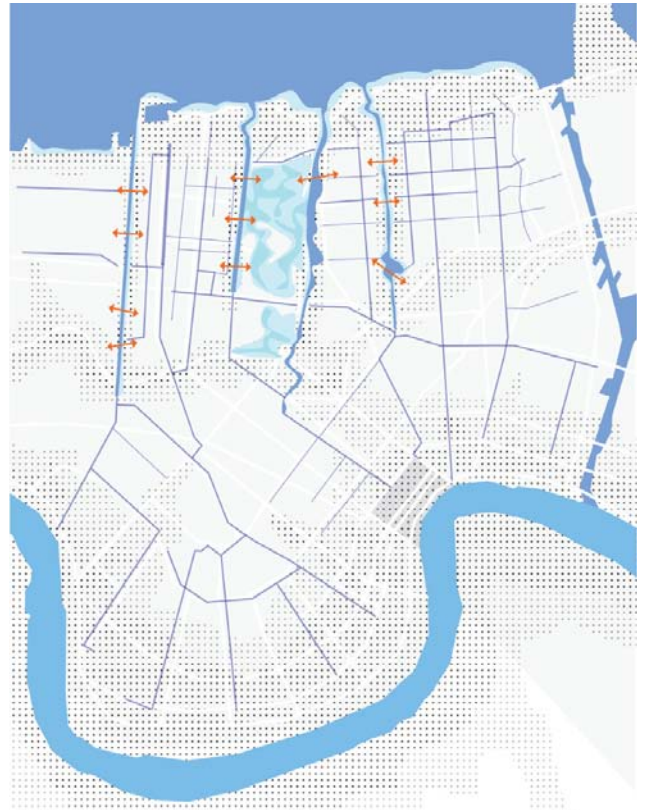
### Historical Bayou's



### Current Outfall Canals



### Proposed Outfall Canals





# THE URBAN BAYOU / A New Housing District

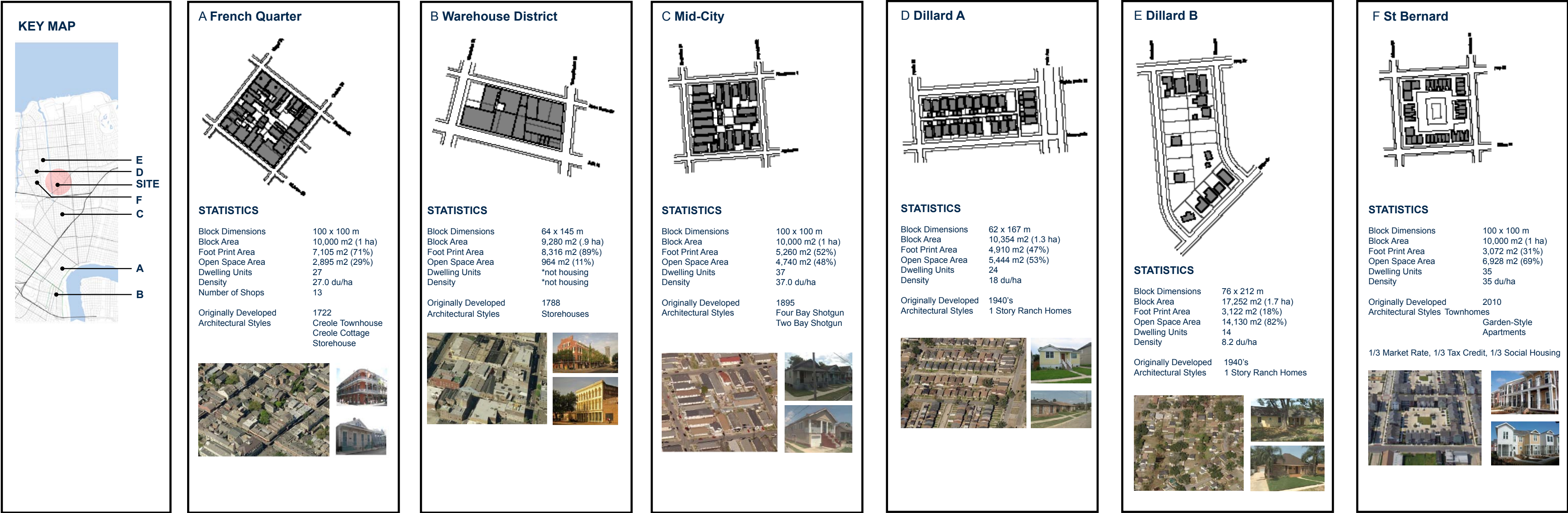
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Mississippi River

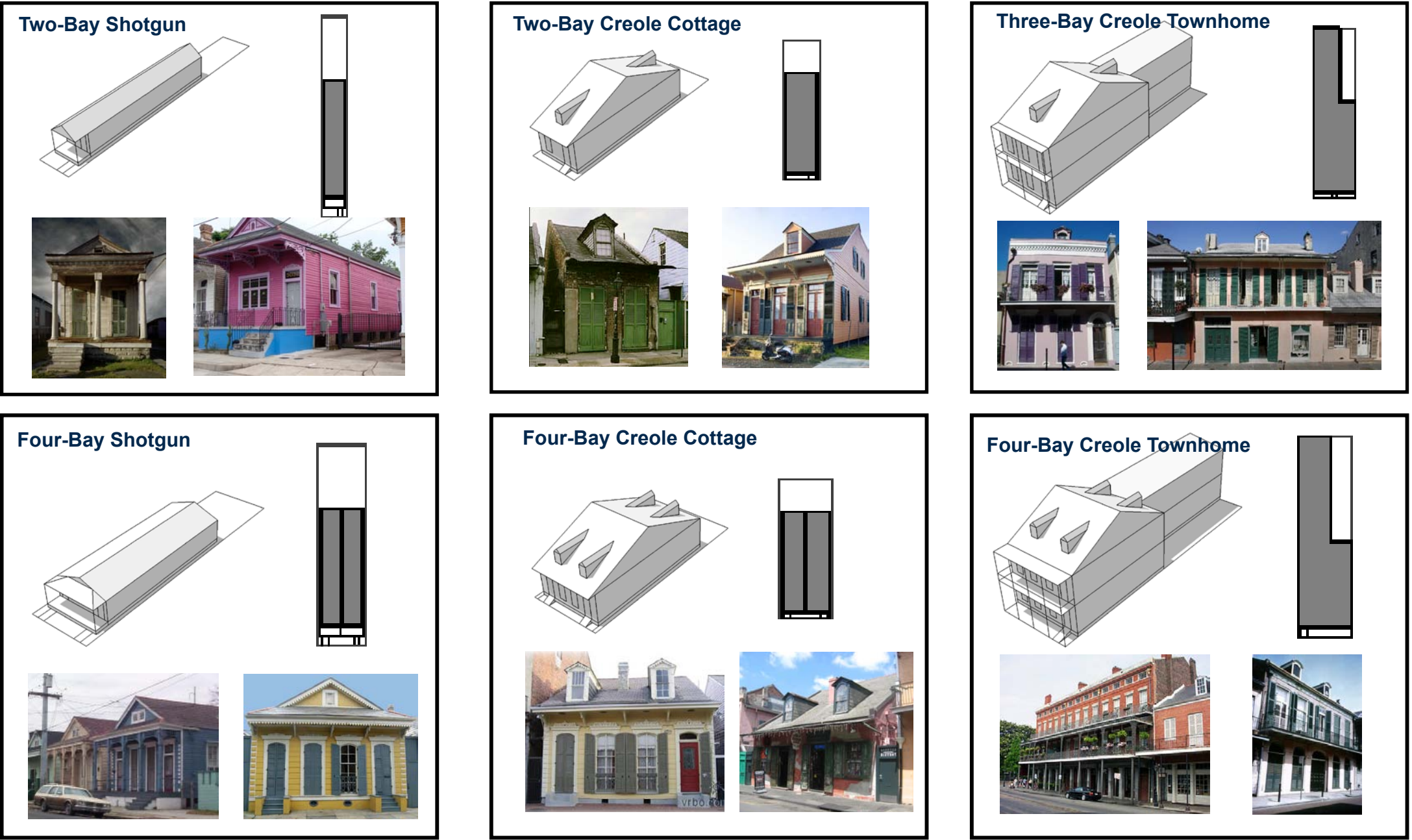
New Orleans

## URBAN FABRIC ANALYSIS

### BLOCK TYPOLOGIES



### HOUSING TYPOLOGIES



## DISTRICT DESIGN

### SITE PLAN



### BLOCK TYPOLOGIES

#### WATER EDGE BLOCK

#### CONCEPT

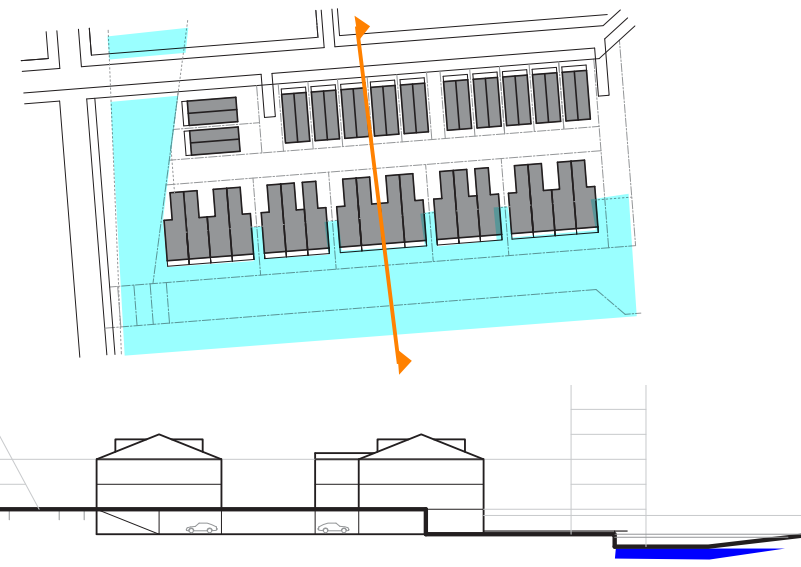
This block serves to connect Paris Ave and the grocery store with the community center through a continuous urban edge. Vehicular accessibility is accommodated through an underground parking garage beneath the entire block. In this way the streetscape facades can be without cars and instead contain porches and pedestrian oriented architectural elements. In addition, the space above the parking garage in the center of the block can be both private and semi-private green space for the residents.

#### STATISTICS

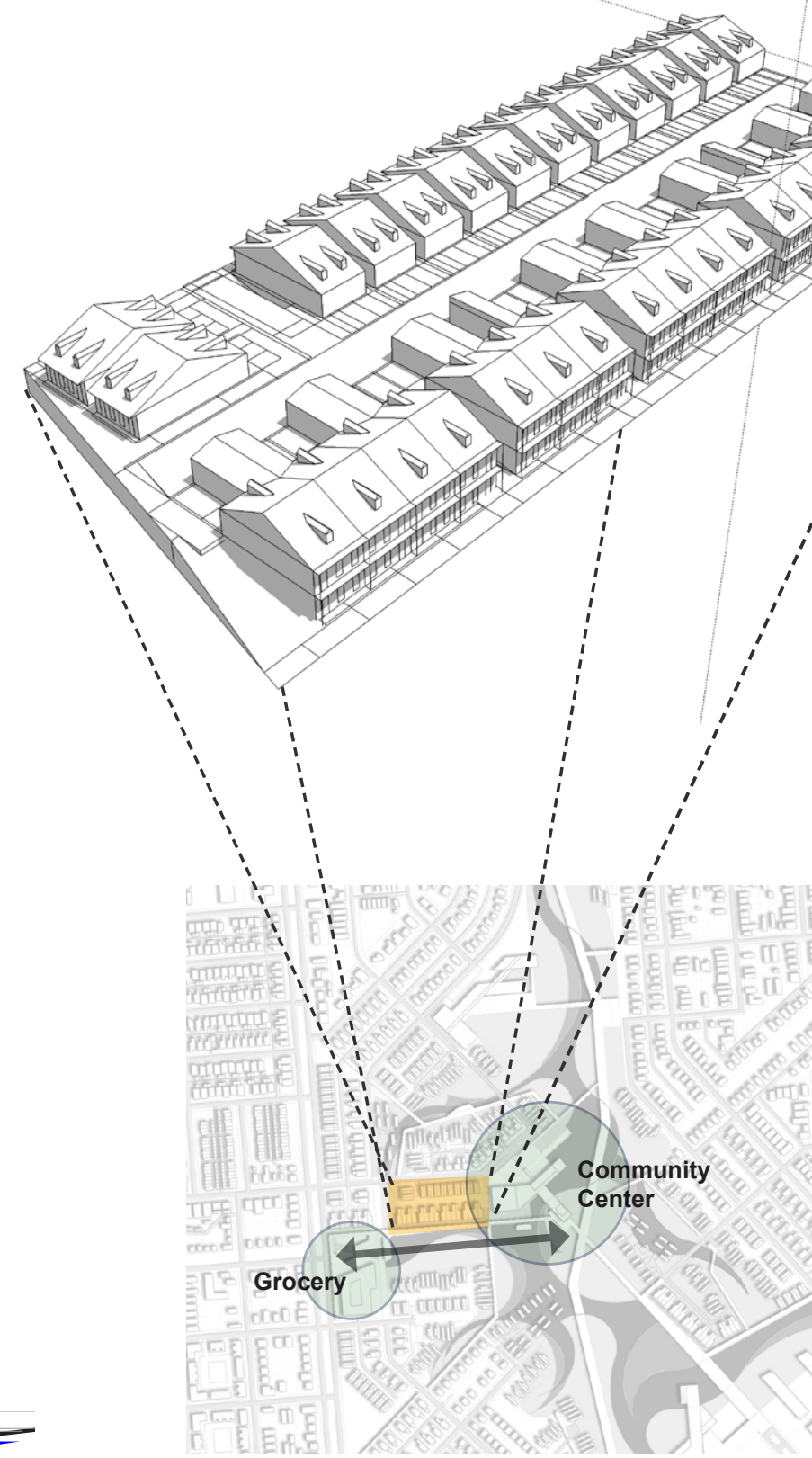
Block Dimensions	70 x 160 m
Block Area	11,304 m <sup>2</sup> (1.1 ha)
Foot Print Area	5,508 m <sup>2</sup> (48%)
Open Space Area	5,796 m <sup>2</sup> (52%)
Floodable Area	1,345 m <sup>2</sup> (12%)
Dwelling Units	42
Density	38.2 du/ha

#### Architectural Styles

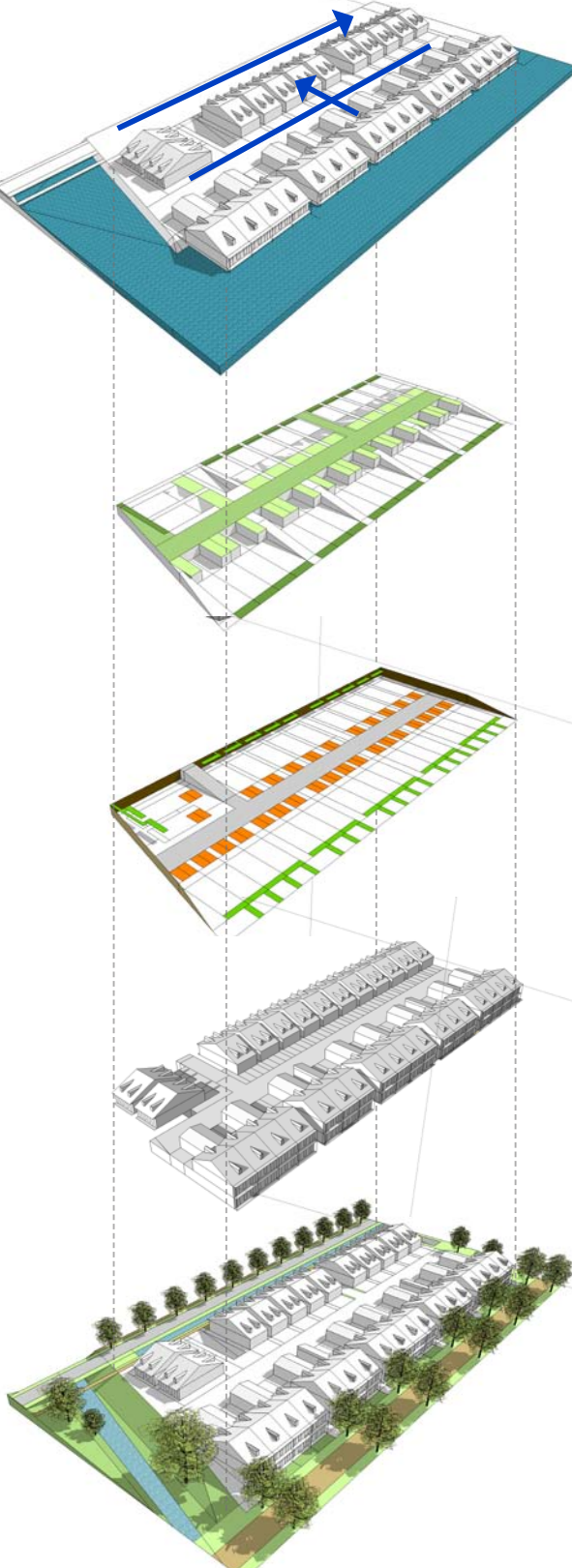
Barrier Creole Townhouse  
Creole Cottage



#### CONTEXT



#### LAYERS



#### Water

Bayou Fluctuation

Site Drainage

Site Drainage

#### Open Space

Public

Semi-Public

Private

#### Access

Front Door

Parking

#### Building

#### Context

### ELEVATED HOUSING BLOCK

#### CONCEPT

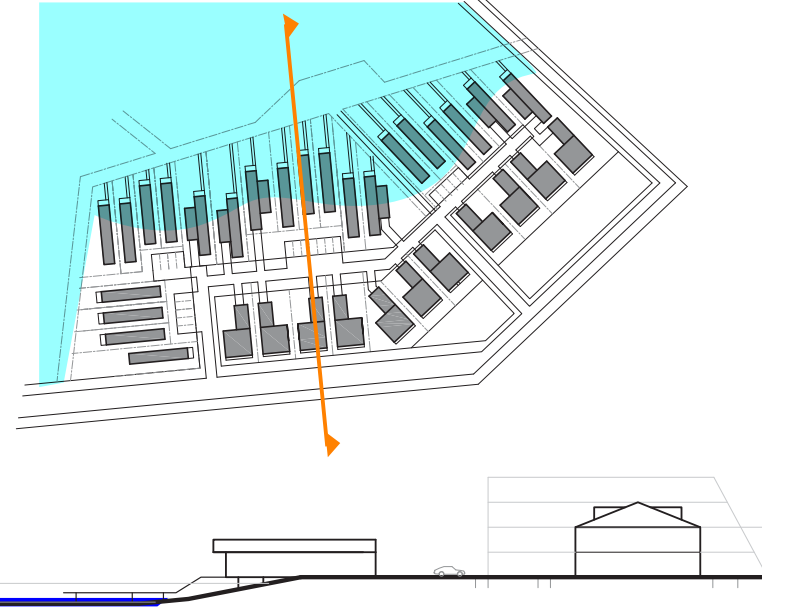
This typical block provides two types of edges, both a public and semi-public edge. The more urban edge on the south addresses a green space adjacent to the community center, while the north side of the block is oriented towards a small-scale bayou environment, geared towards only local residents. Vehicular access is provided by an alleyway in the center of the block allowing access to both personal garages and shared separate parking spaces.

#### STATISTICS

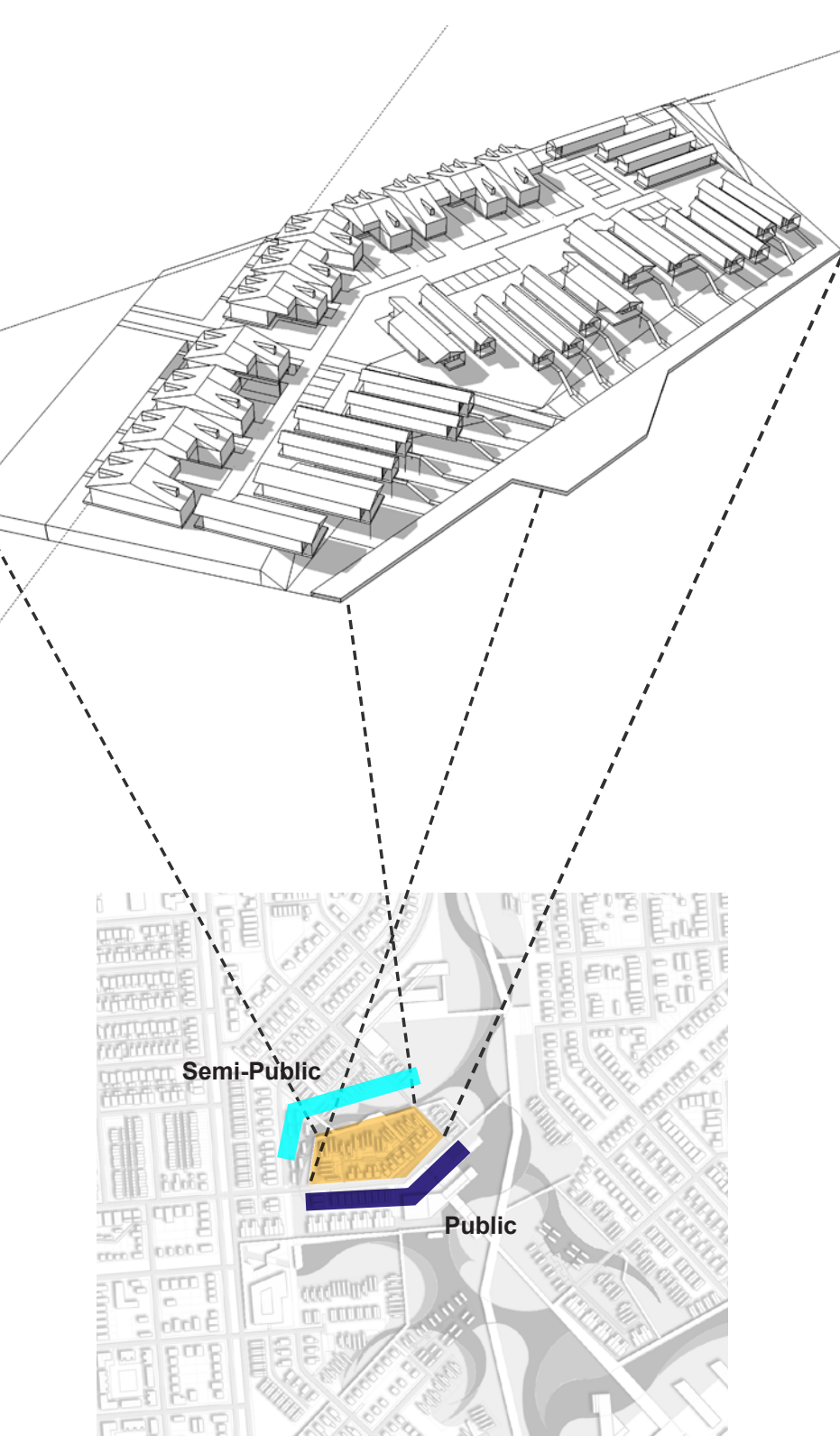
Block Dimensions	± 80 x 200 m
Block Area	15,045 m <sup>2</sup> (1.5 ha)
Foot Print Area	4,104 m <sup>2</sup> (27%)
Open Space Area	10,941 m <sup>2</sup> (73%)
Floodable Area	4,026 m <sup>2</sup> (26%)
Dwelling Units	33
Density	22.0 du/ha

#### Architectural Styles

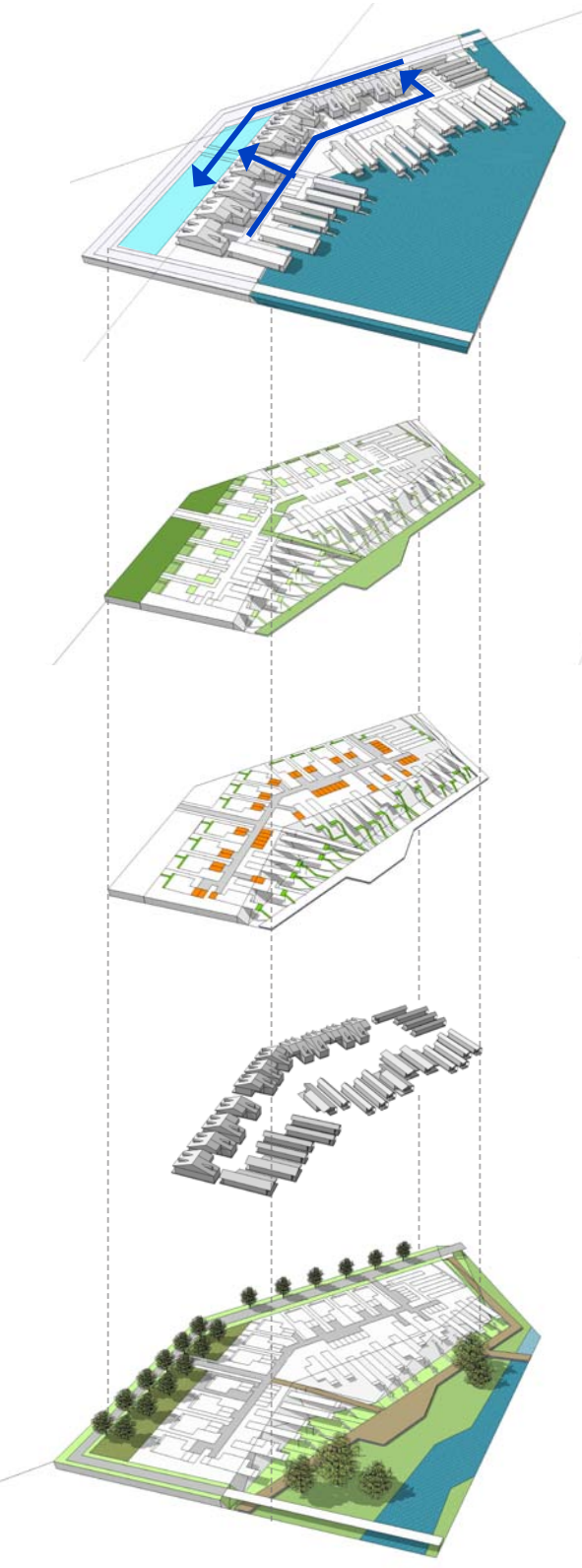
Creole Cottage  
Elevated Shotgun



#### CONTEXT



#### LAYERS



#### Water

Bayou Fluctuation

Site Drainage

Reuse & Infiltration

#### Open Space

Public

Semi-Public

Private

#### Access

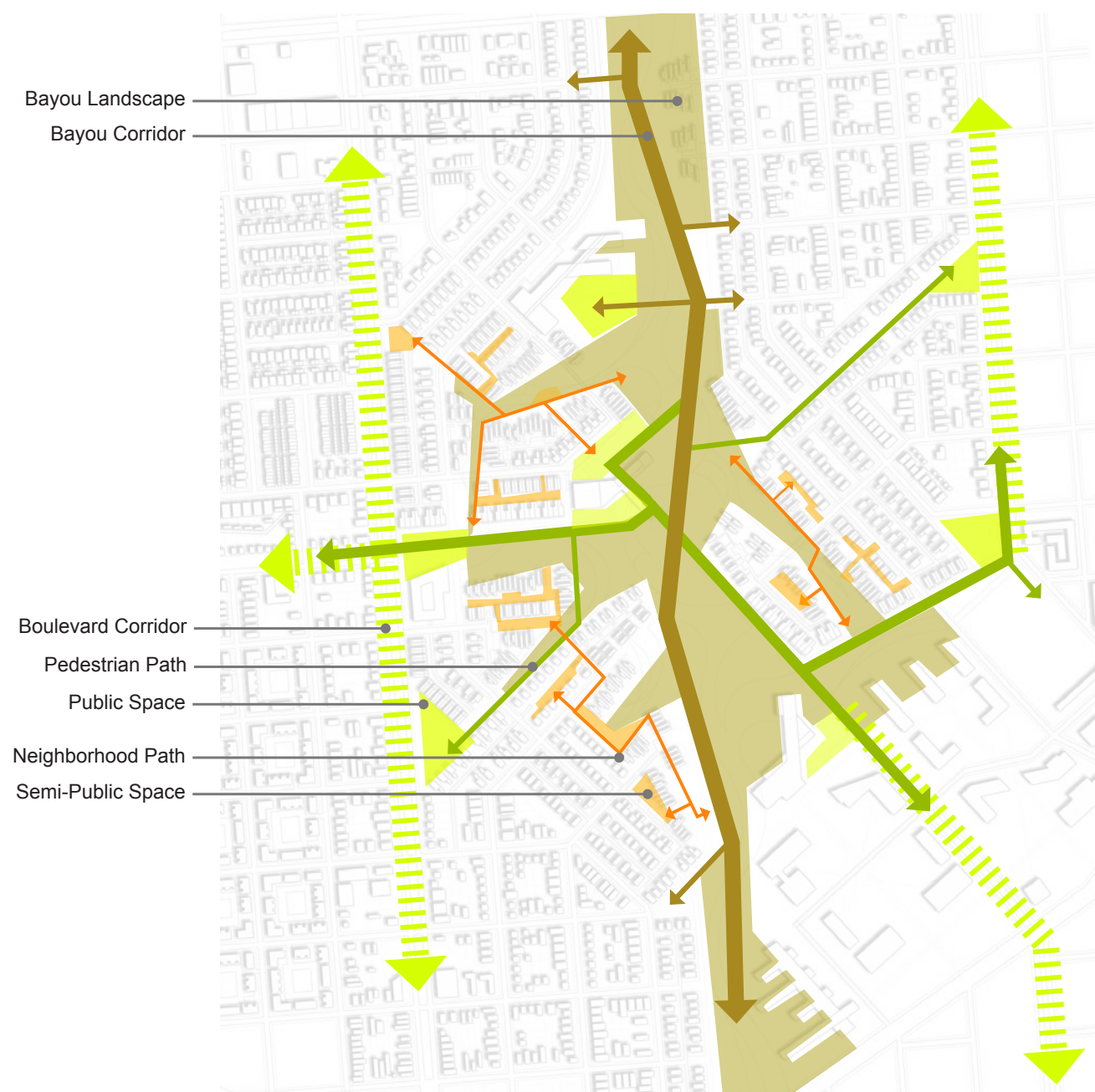
Front Door

Parking

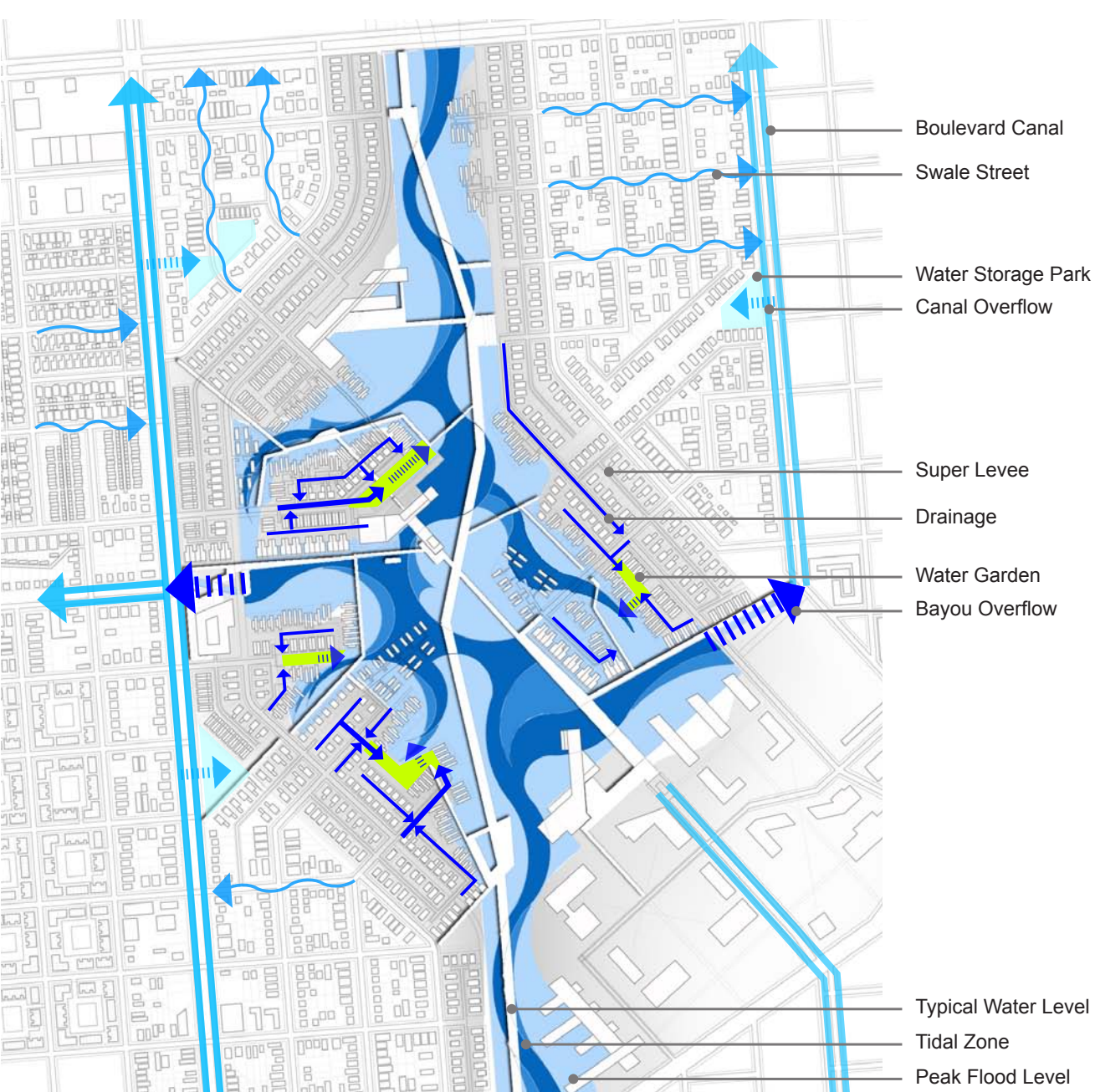
#### Building

#### Context

### OPEN SPACE NETWORK



### WATER NETWORK

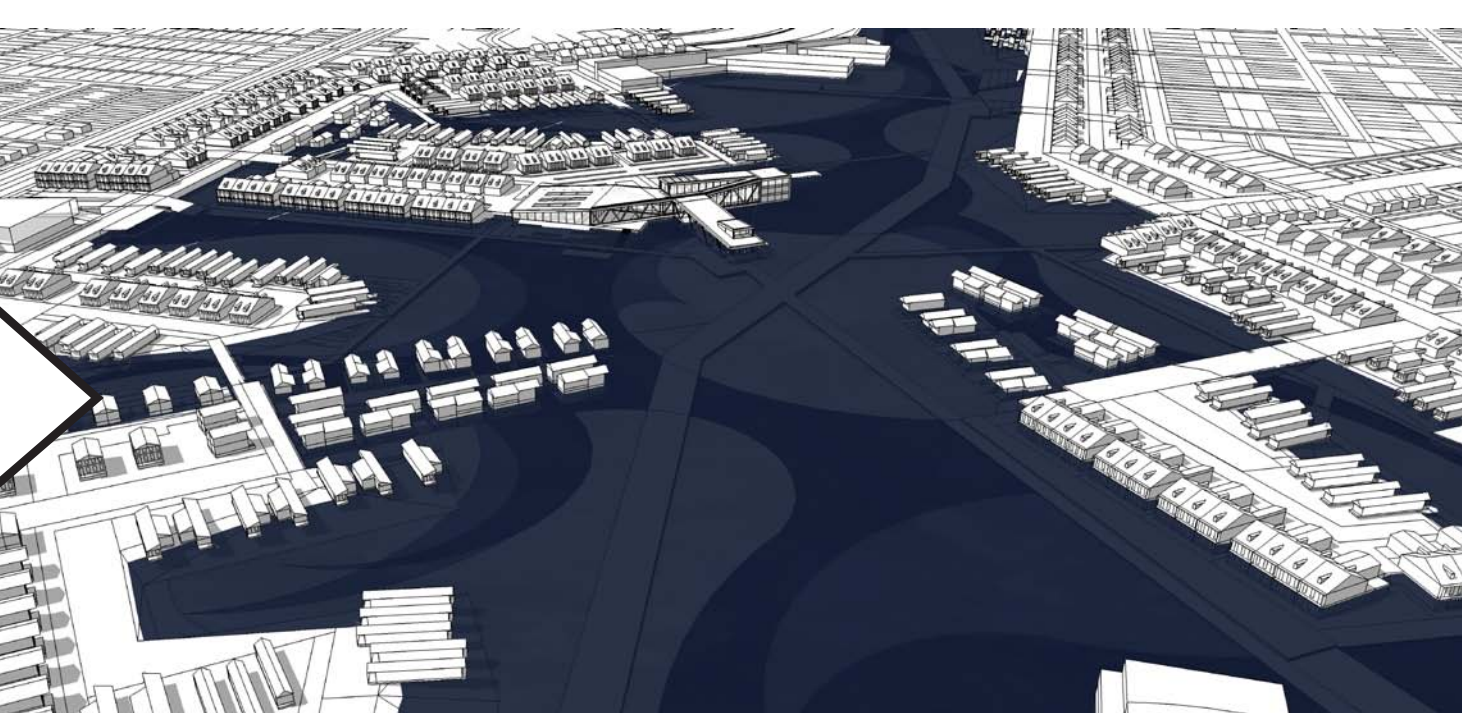


### FLUCTUATING WATER

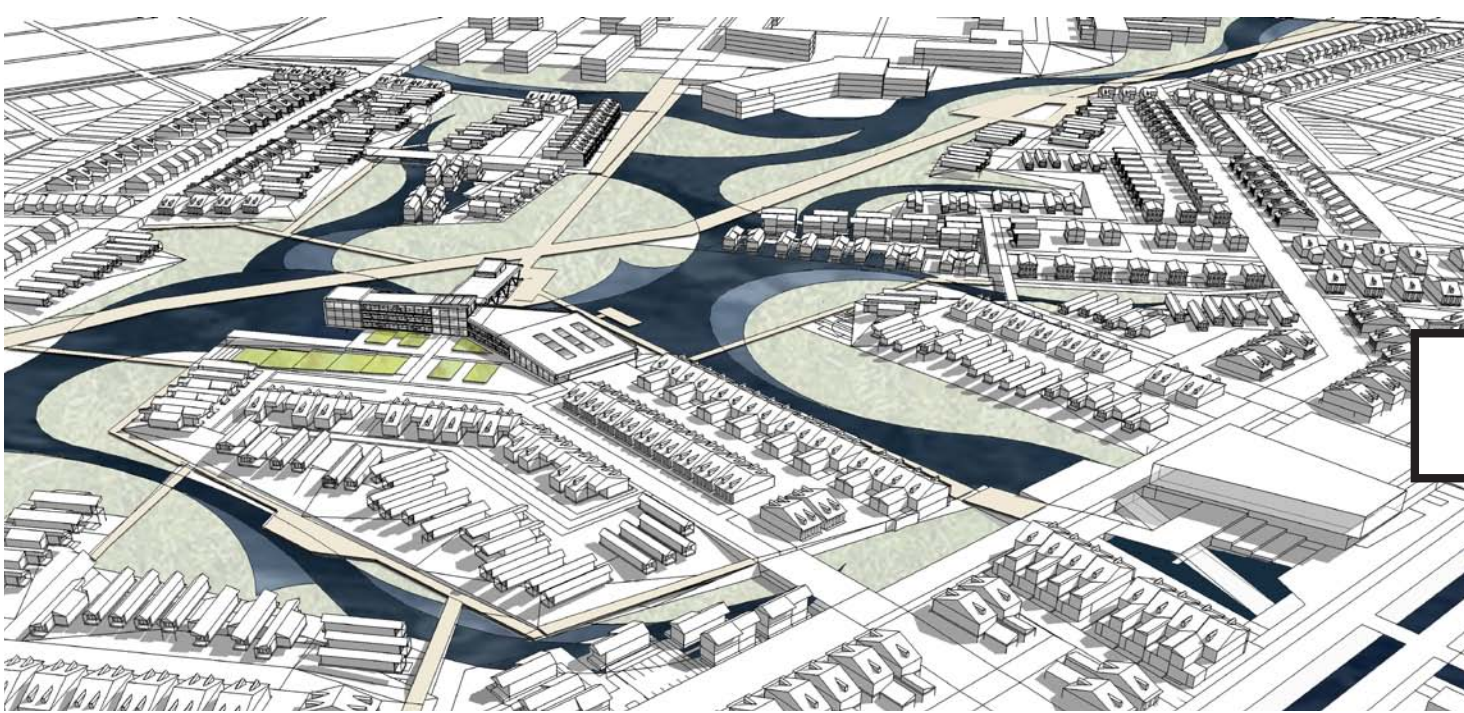
Typical Water Level



Maximum Water Level



Typical Water Level



Maximum Water Level





# THE URBAN BAYOU / Neighborhood Cultural Center

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Mississippi River

New Orleans

## FLOOR PLANS

Scale 1:500

### PROGRAM

1 Library	547 m2
2 Music Rooms (6x)	220 m2
3 Teen Room	152 m2
4 Art Studio	100 m2
5 Learning Exhibits	217 m2
6 Performance Theater	267 m2
7 Front Desk	100 m2
8 Community Kitchen	108 m2
9 Garden Storage	60 m2
10 Gymnasium	1452 m2
11 Cafe	192 m2
12 Public Space / Circulation	895 m2
13 Tech / Storage	496 m2
14 Parking	820 m2

Building Integrated Outdoor Space	
Roof Terraces & Walk	282 m2
Porch	626 m2
Nature Bridge	235 m2
Nature Ramp	160 m2
Cafe Terrace	140 m2

Usable Space	5779 m2
Public Space / Circulation	1290 m2
Ratio	78 : 22

Total Area 7069 m2

- Public Space Interior
- Public Space Exterior
- Multi-Purpose
- Technical / Storage
- Vertical Circulation
- Parking

### 02 Floor

### 01 Floor

### 00 Floor

Scale 1:250

### -01 Floor

## STRUCTURE

#### MATERIALS

- Concrete Walls: 300mm Concrete
- Truss Beams: 1500x300mm Steel
- Frame Beams: HEA 500x300mm Steel
- Beams: IPE 500x300mm Steel
- Skylight Beams: IPE 150x150mm Steel
- Aluminum Columns: RHS 500x500mm Steel
- Angled Columns: RHS 500x300mm Steel
- Secondary Columns: IPE 500x300mm Steel
- Flooring: Concrete Slab / Insulation / Vinyl Flooring
- Roof: Thermal Insulation / Filter Map / Drainage Layer / Top Soil / Vegetation

#### MATERIALS

- Concrete Walls: 300mm Concrete
- Frame Beams: HEA 500x300mm Steel
- Beams: IPE 500x300mm Steel
- Aluminum Columns: RHS 500x500mm Steel
- Angled Columns: RHS 500x300mm Steel
- Secondary Columns: IPE 500x300mm Steel
- Flooring: Concrete Slab / Insulation / Vinyl Flooring

#### MATERIALS

- Concrete Walls: 300mm Concrete
- Top of Foundation: 300mm Concrete
- Frame Beams: HEA 500x300mm Steel
- Beams: IPE 500x300mm Steel
- Piles: 300x300mm Reinforced Concrete
- Angled Columns: RHS 500x300mm Steel
- Secondary Columns: IPE 500x300mm Steel
- Flooring: Concrete Slab / Insulation / Vinyl Flooring
- Ground Floor: Concrete Plinth / Insulation / Waterproofing / Concrete Slab / Vinyl Flooring

## CONSTRUCTION

### 01 Foundations & Piles

#### MATERIALS

- Concrete Footings: 500x1000mm Reinforced Concrete
- Foundation Walls: 300mm Reinforced Concrete
- Piles: 300x300mm Reinforced Concrete

### 02 Primary Frame

#### MATERIALS

- Angled Columns: RHS 500x300mm Steel
- Aluminum Columns: RHS 500x500mm Steel
- Frame Beams: HEA 500x300mm Steel

### 03 Beams & Columns

#### MATERIALS

- Typical Floors: IPE 500x300mm Steel
- Typical Beams: IPE 500x300mm Steel
- Gymnasium Beams: 2000x300mm Steel Truss

### 04 Walls, Floors & Facade

#### MATERIALS

- Typical Walls: Steel Frame / Insulation / Vapor Barrier / Finish
- Typical Floors: Concrete Slab / Insulation / Vinyl Flooring
- Typical Ground Floor: Concrete Plinth / Insulation / Waterproofing / Concrete Slab / Vinyl Flooring
- Glass Facade: Steel Frame / Double Glazing Glass
- Aluminum Facade: Steel Frame / Insulation / Aluminum Panels

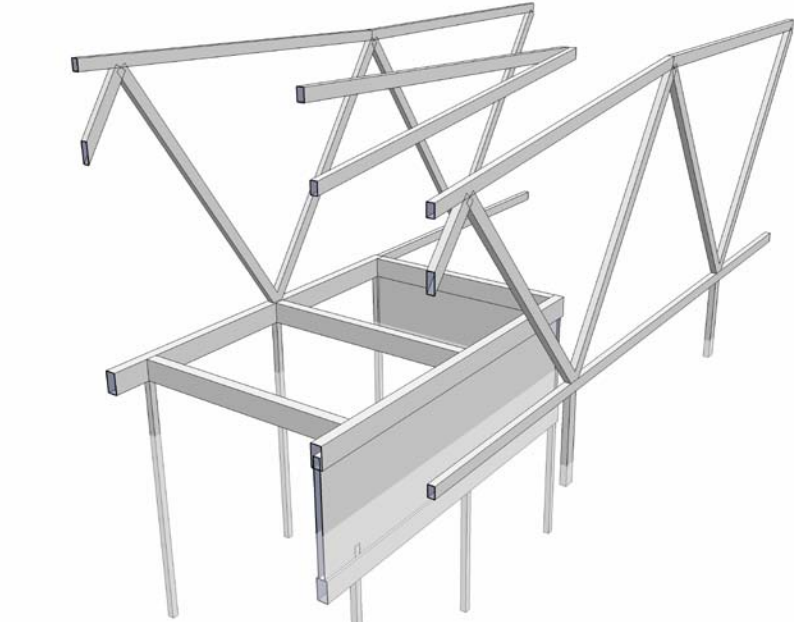
### 05 Roof

#### MATERIALS

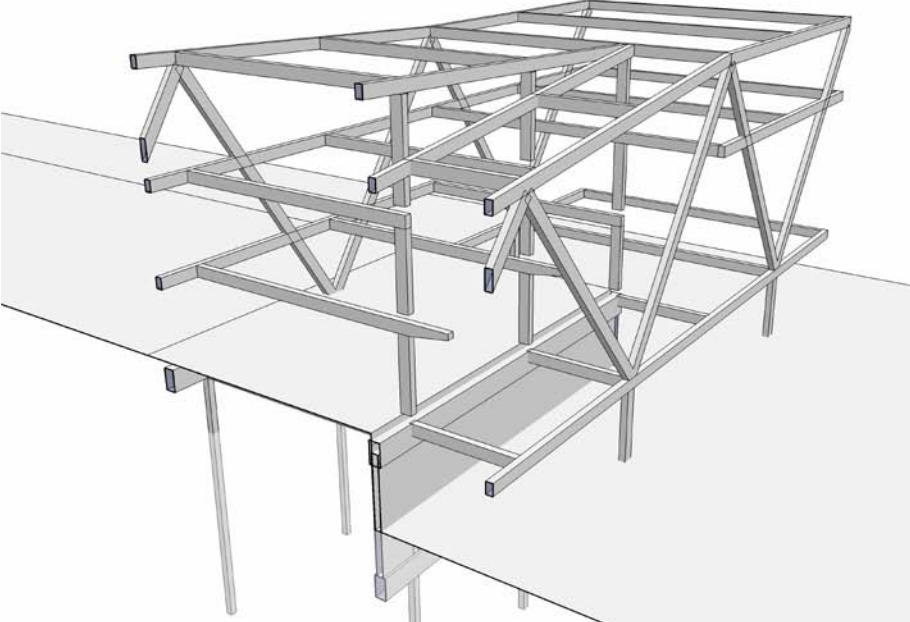
- Typical Roof: Concrete Slab / Vapor Barrier / Thermal Insulation / Filter Map / Drainage Layer / Top Soil / Vegetation

## CONSTRUCTION (Detail)

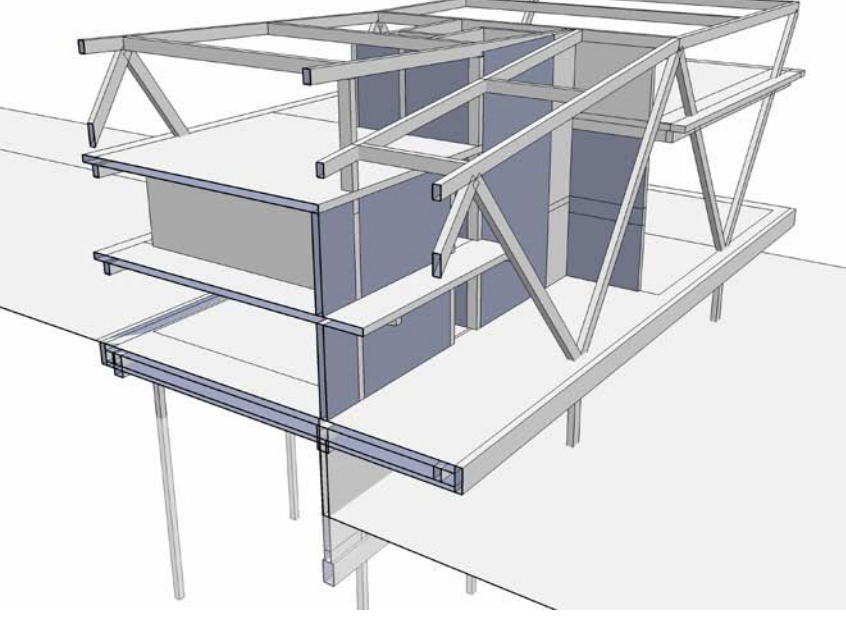
### 01) FOUNDATIONS & FRAME



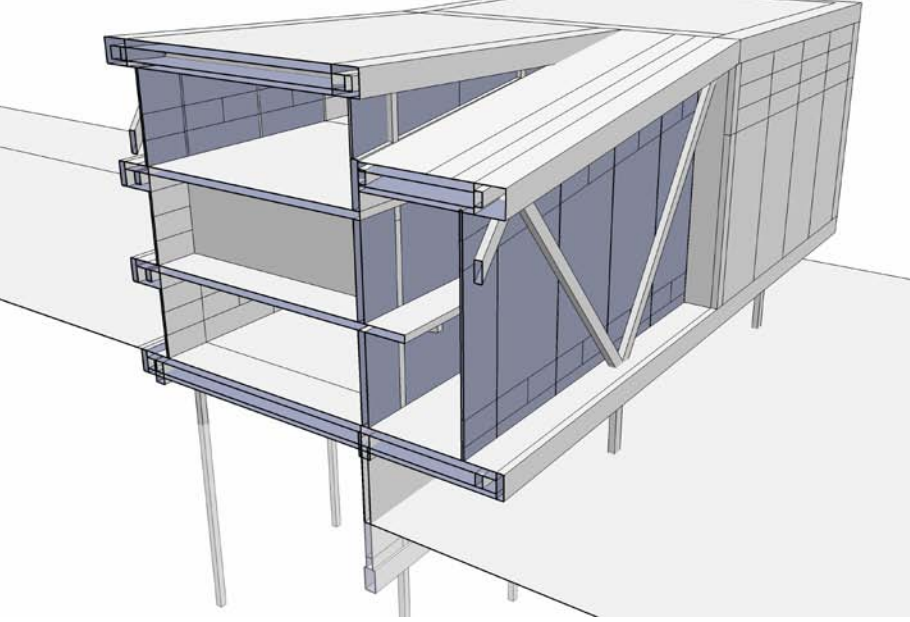
### 02) BEAMS & COLUMNS



### 03) WALLS & FLOORS



### 04) ROOF & FACADE





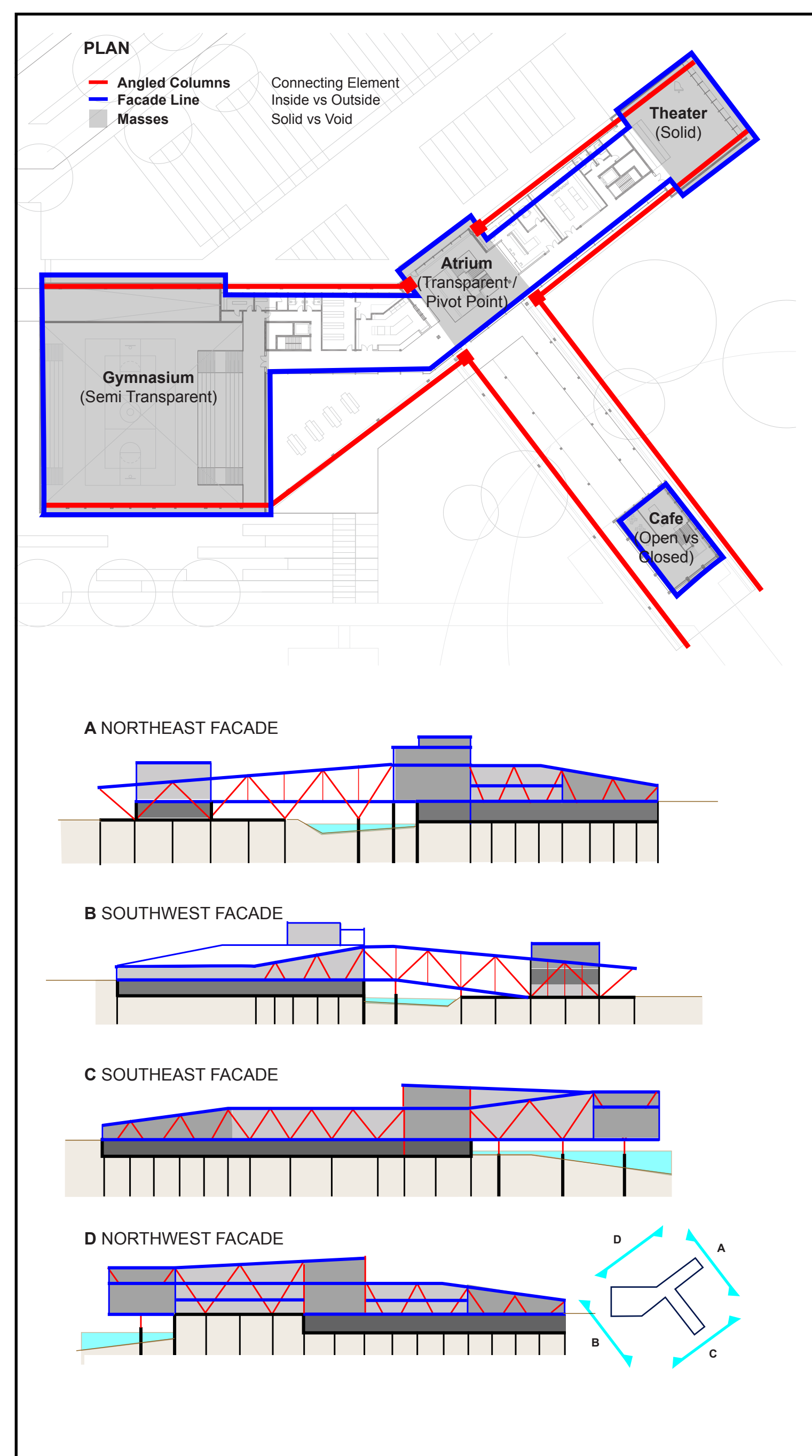
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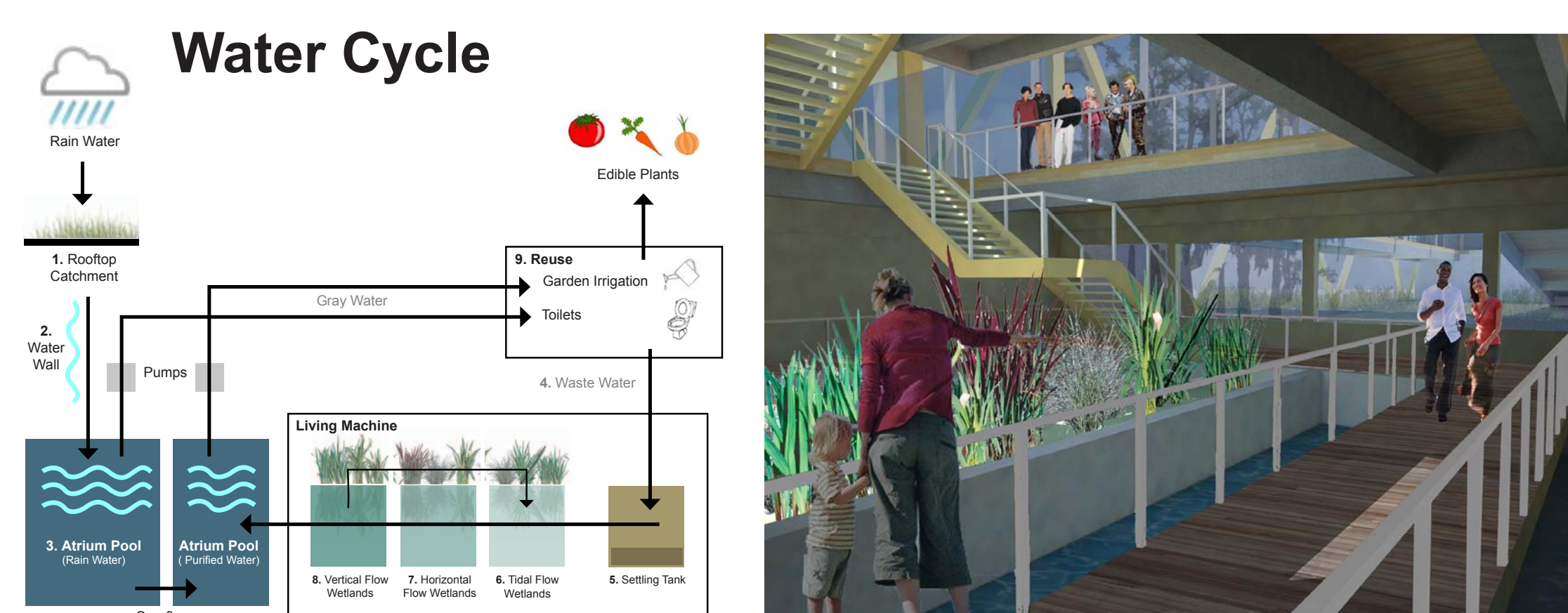
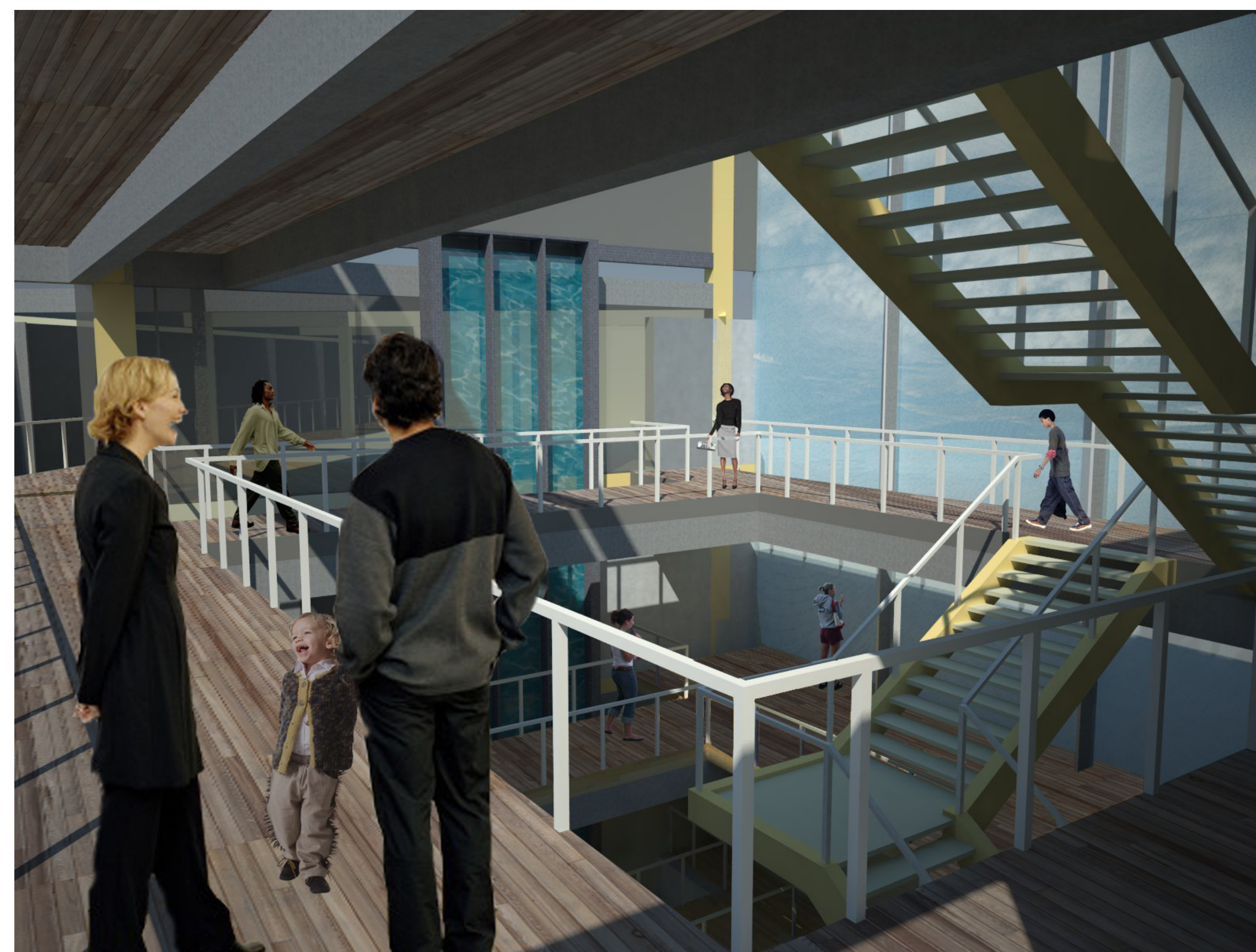
Mississippi River

New Orleans

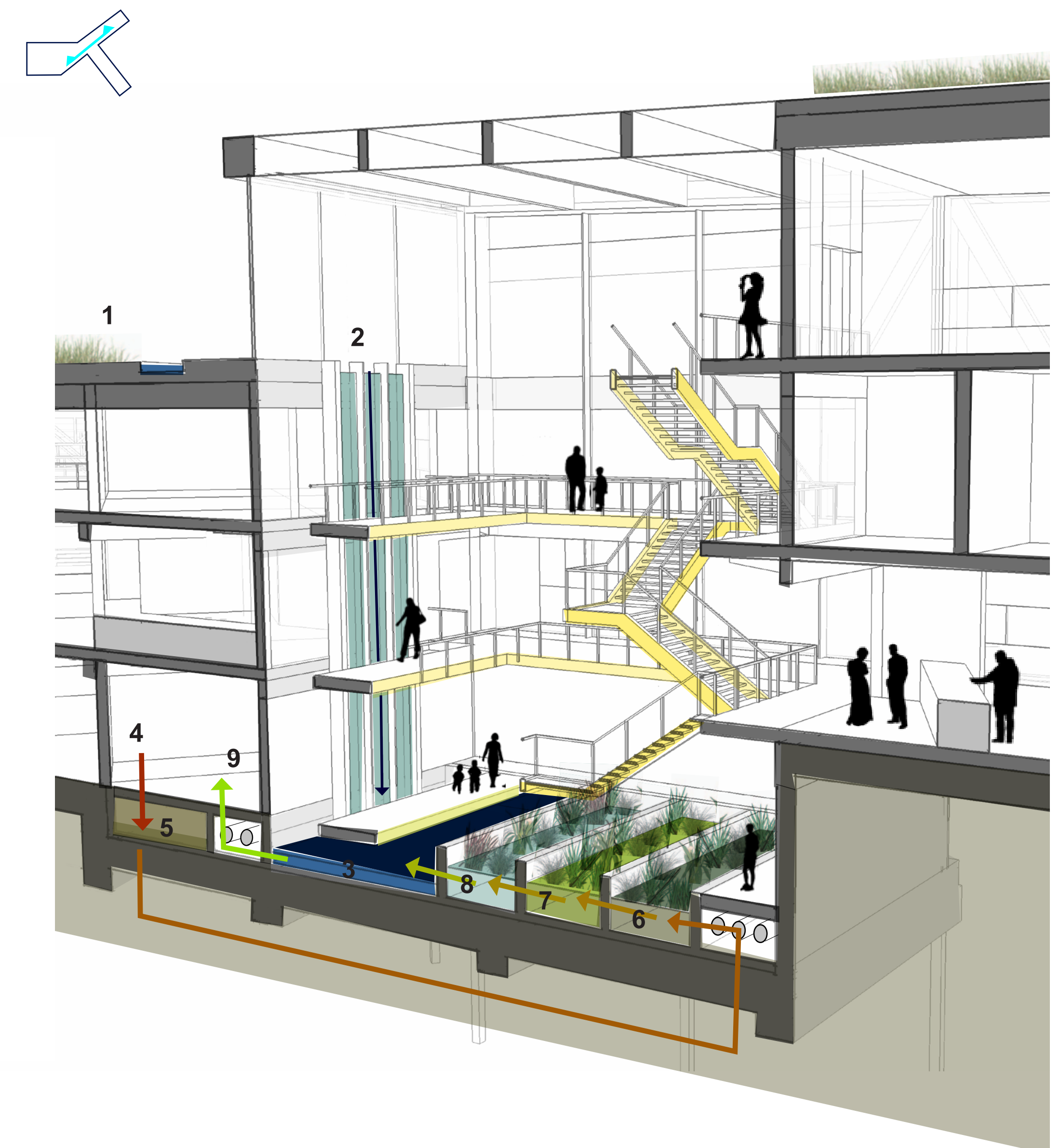
## FACADE CONCEPT



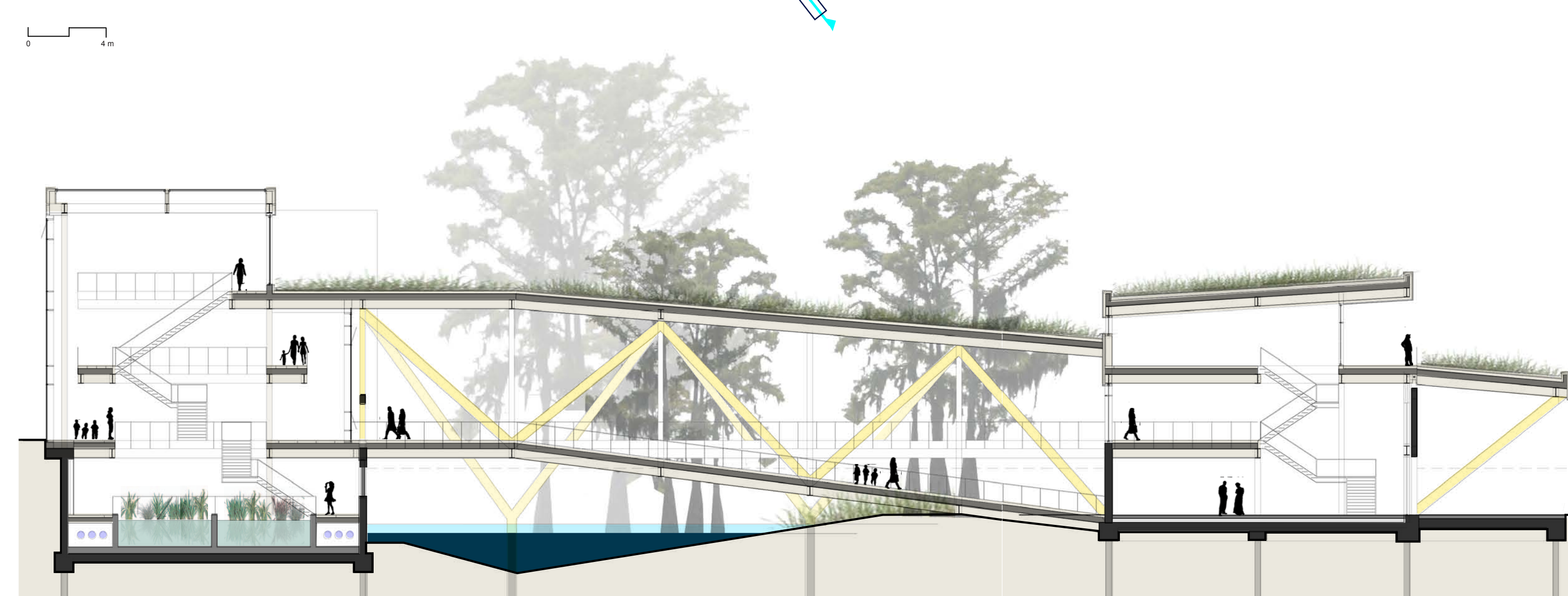
## THE CENTRAL ATRIUM



## Living Machine



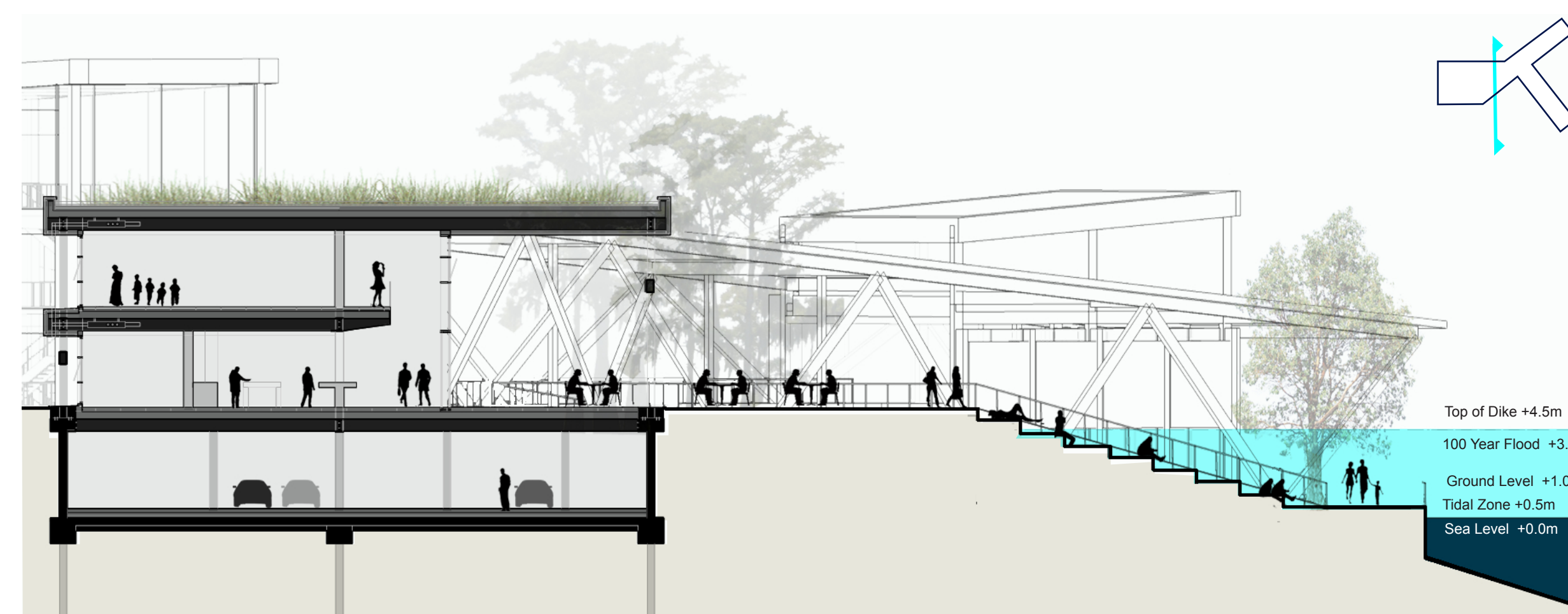
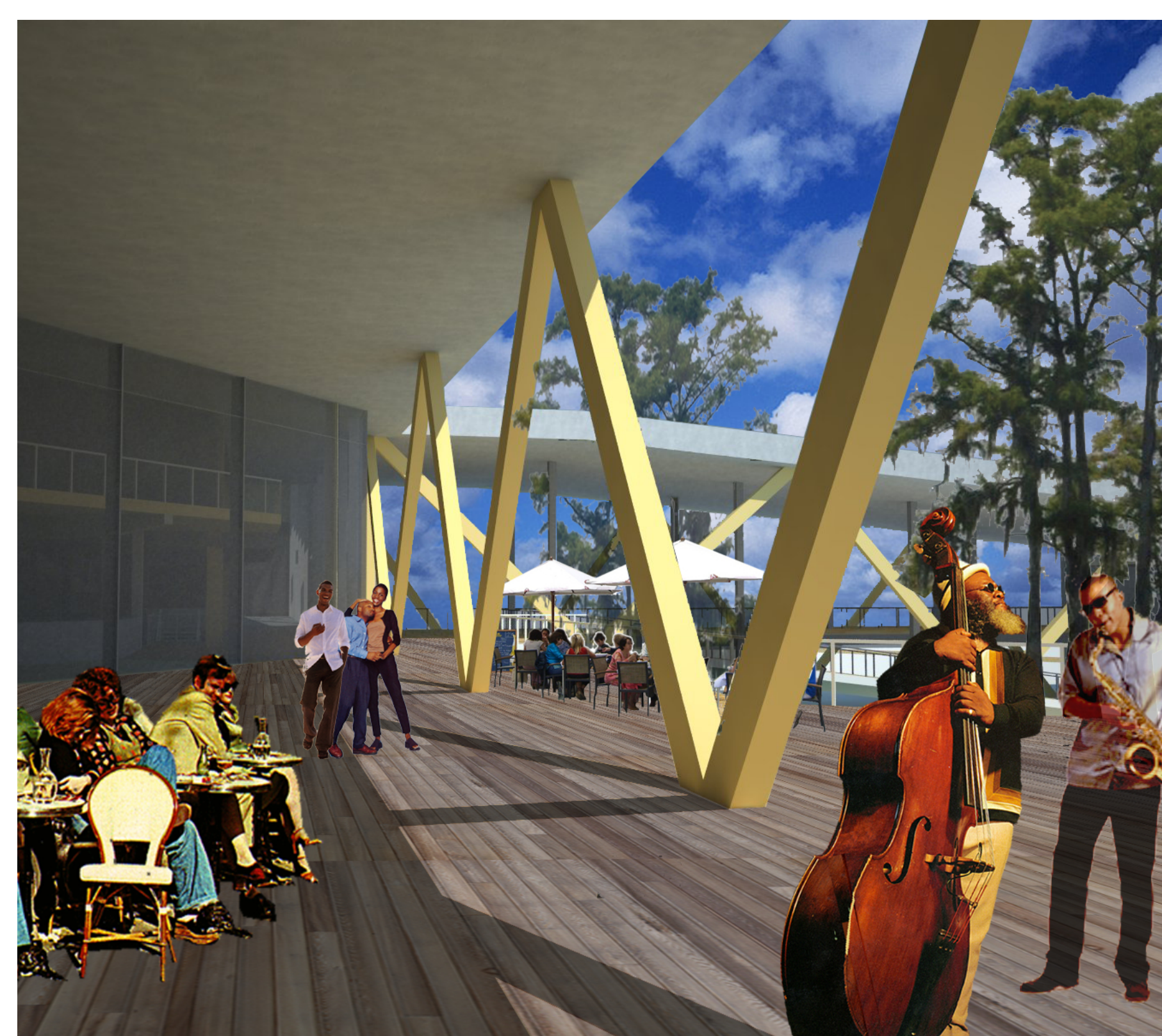
## THE NATURE BRIDGE



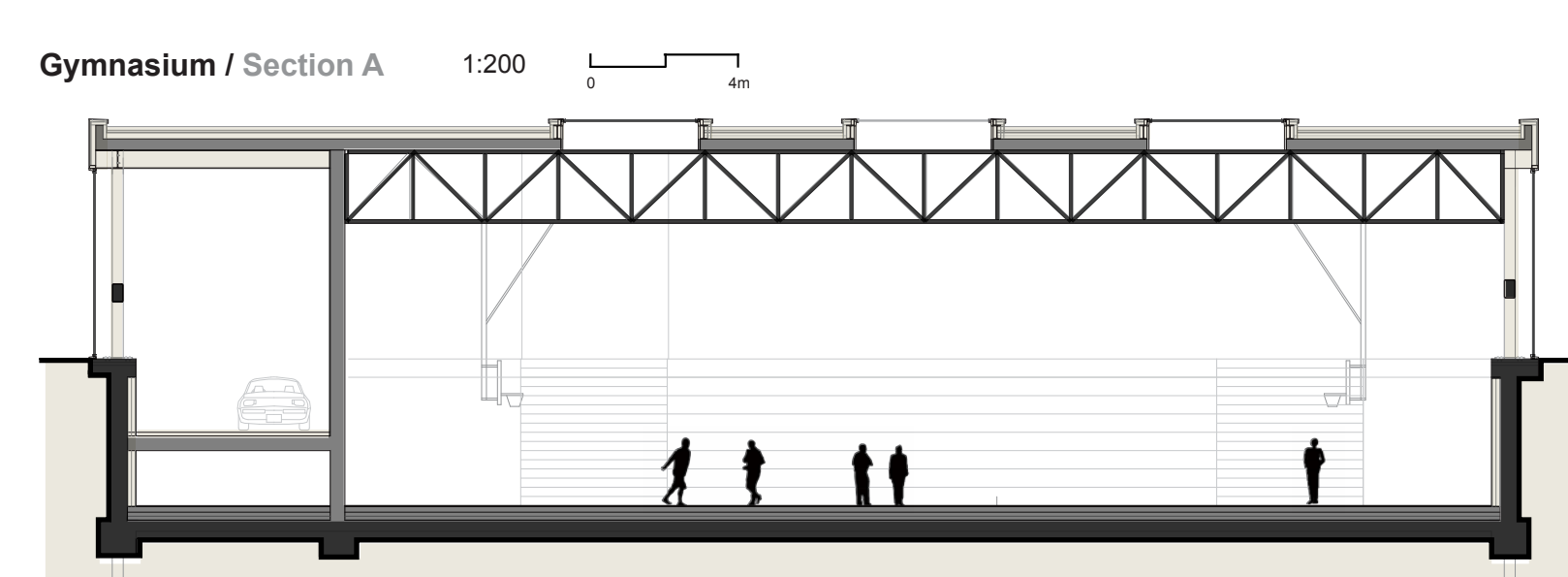
## THE CLOSEABLE CAFE



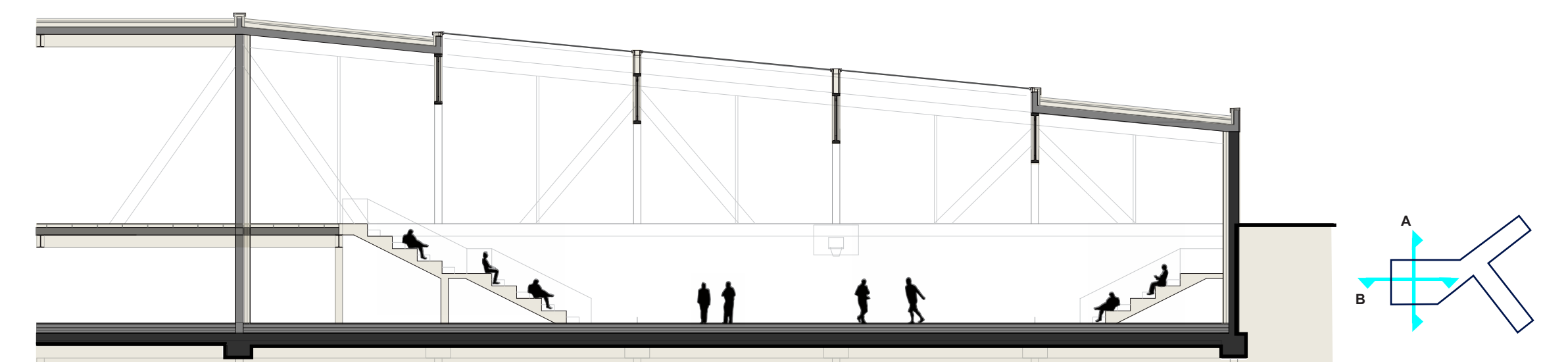
## THE PORCH



## GYMNASIUM



Gymnasium / Section B





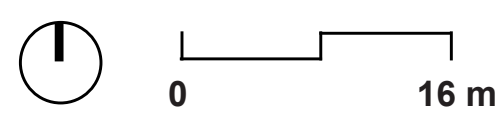
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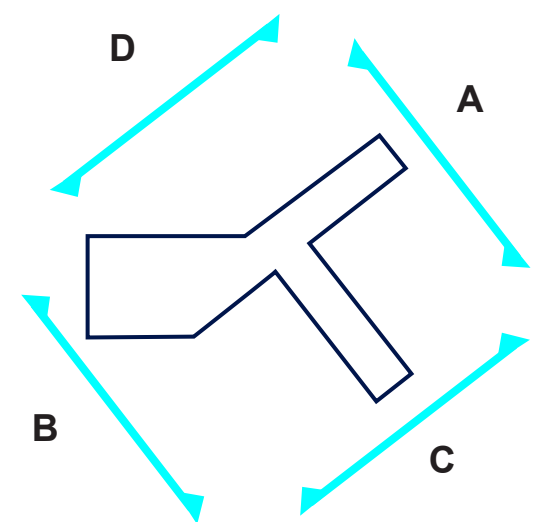
Mississippi River

New Orleans

## ELEVATIONS



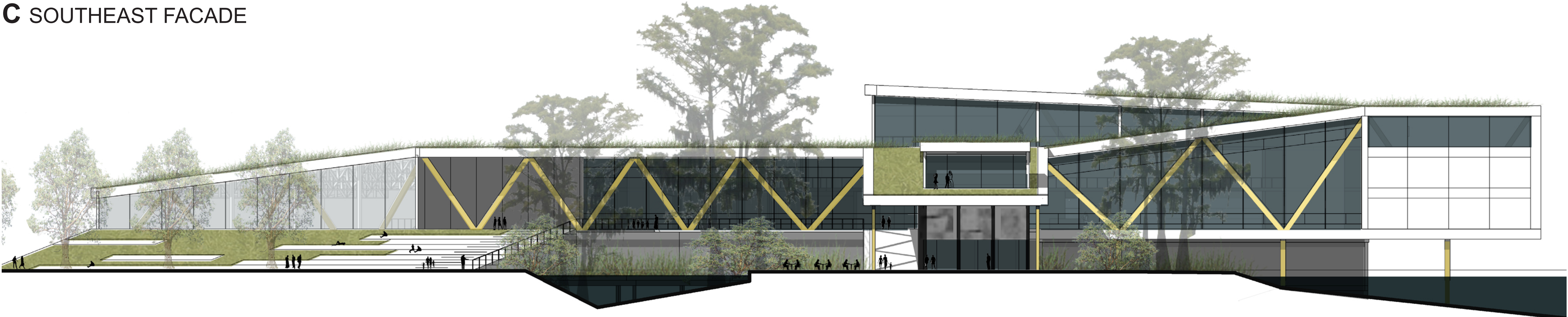
### A NORTHEAST FACADE



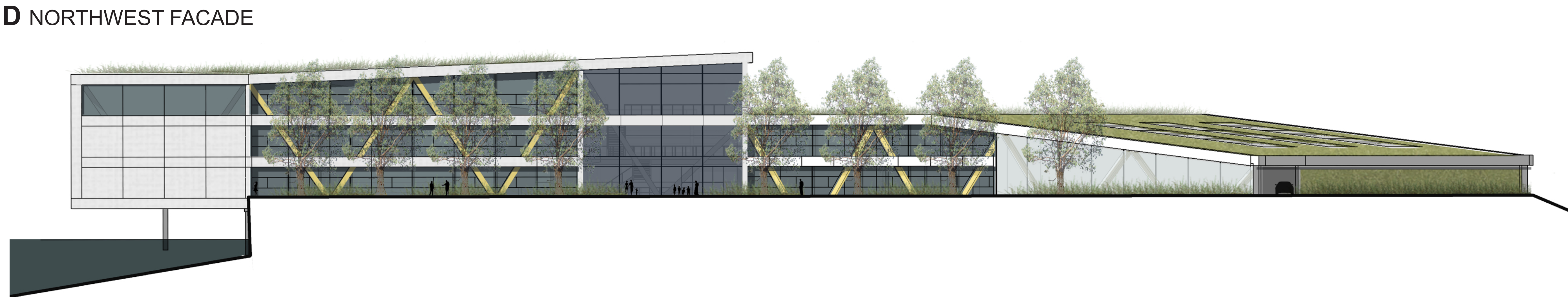
### B SOUTHWEST FACADE



### C SOUTHEAST FACADE

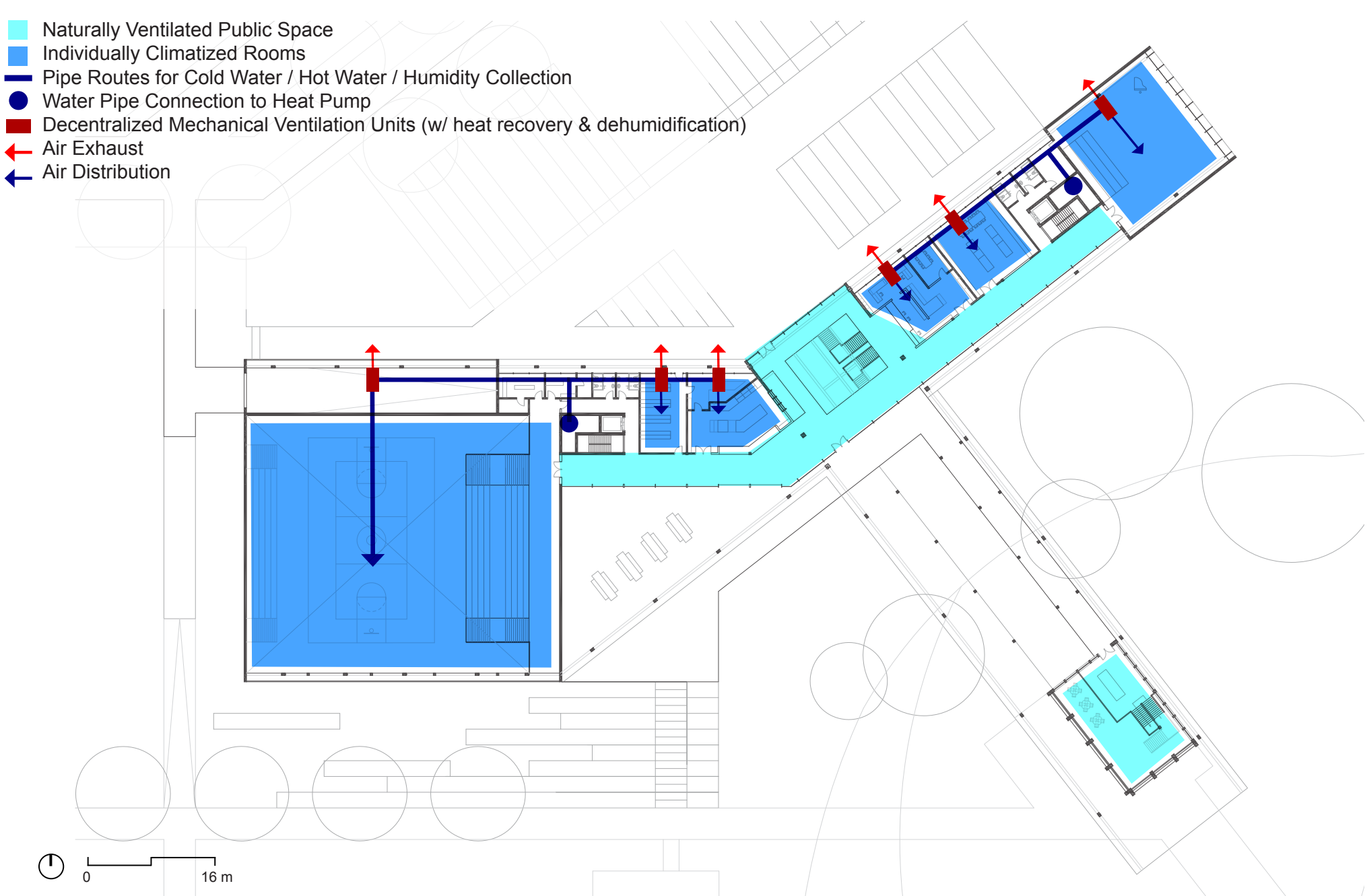


### D NORTHWEST FACADE

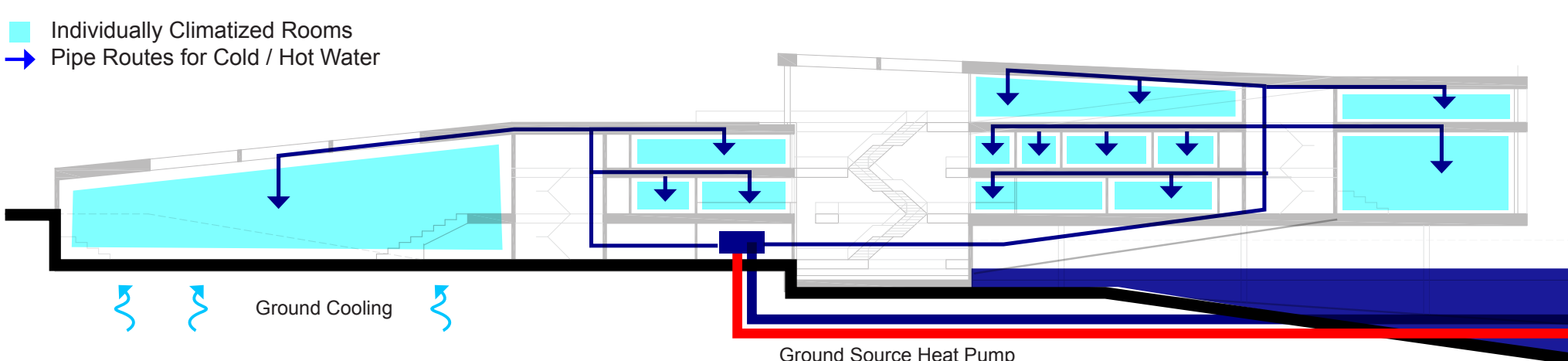


## CLIMATE SYSTEMS

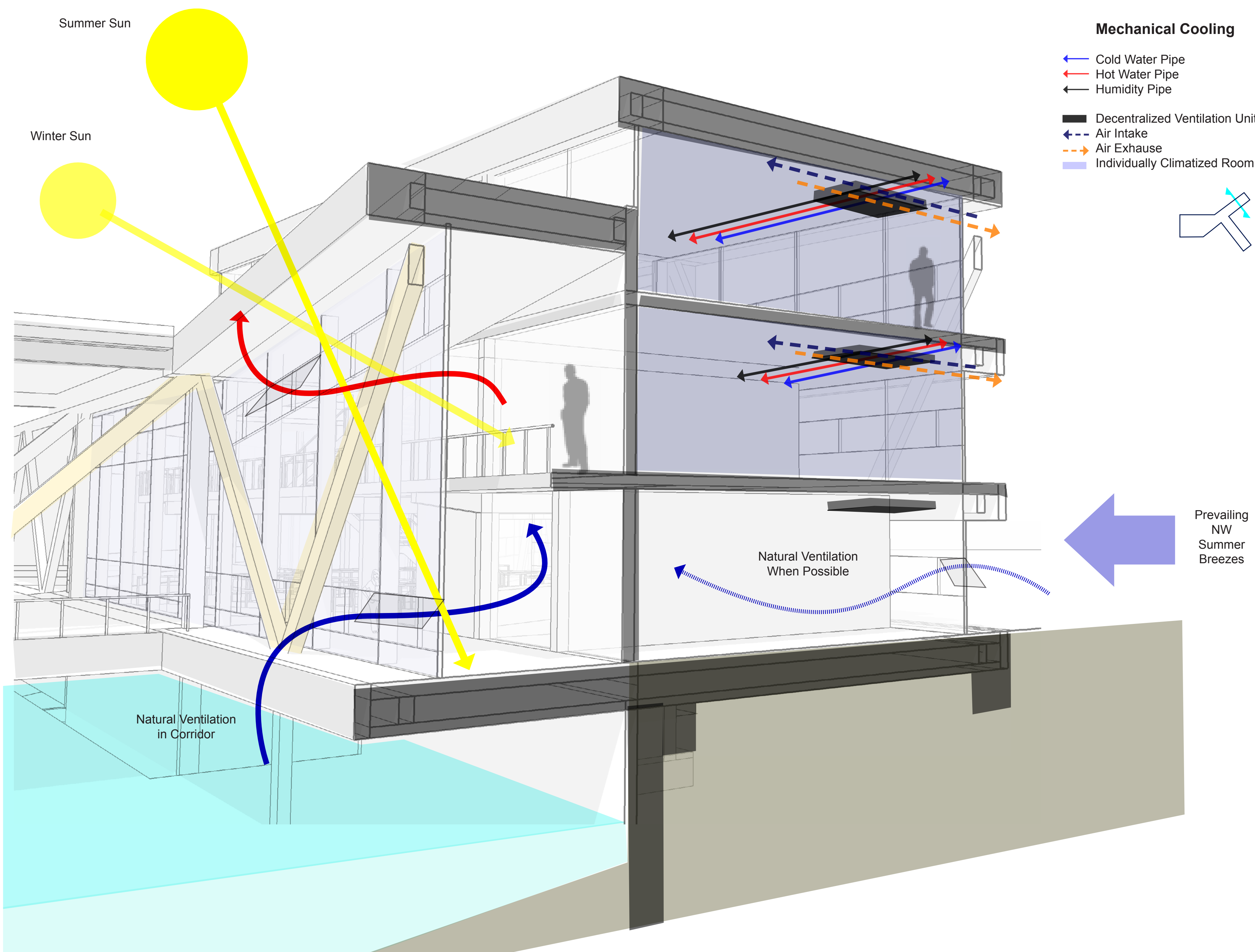
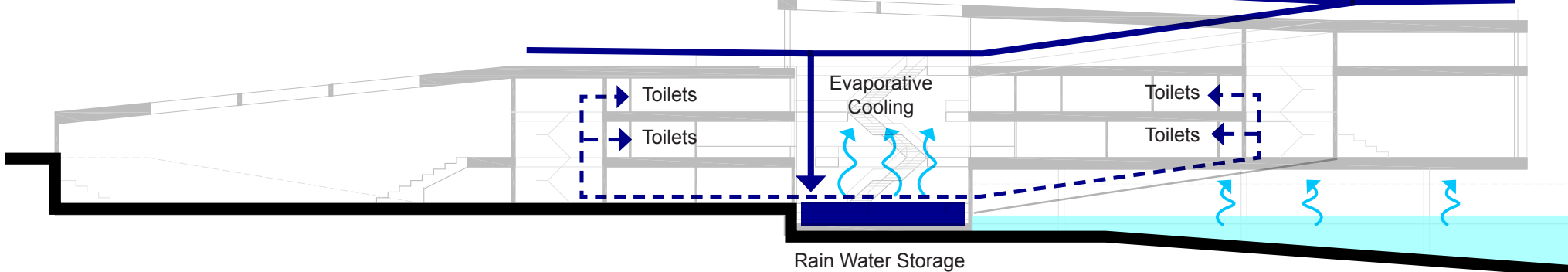
### TYPICAL DISTRIBUTION STRATEGY



### COOLING STRATEGY



### WATER STRATEGY





# THE URBAN BAYOU / Neighborhood Cultural Center

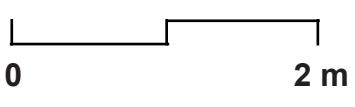
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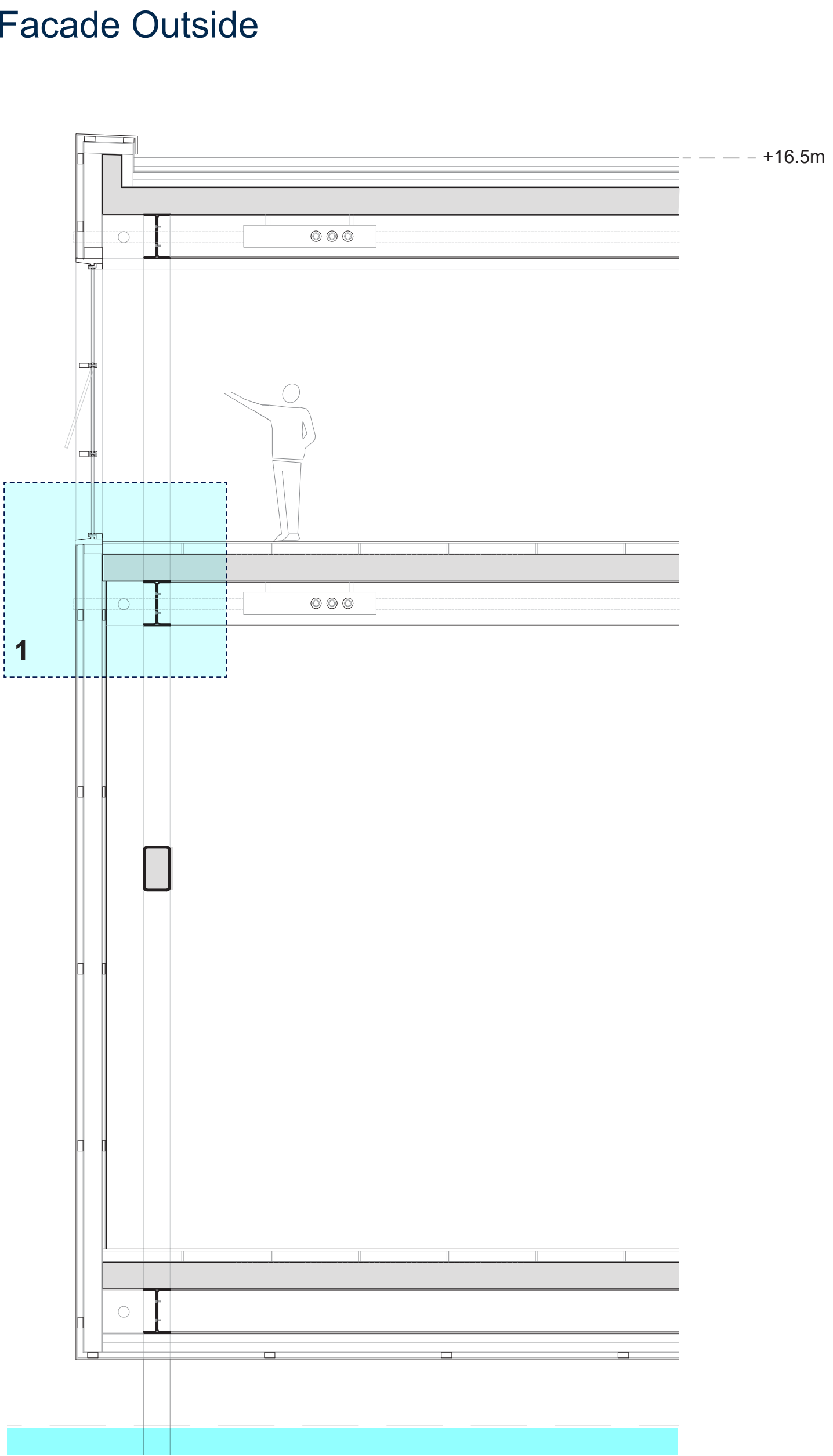


SECTIONS

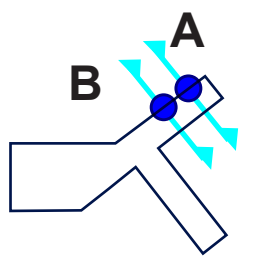
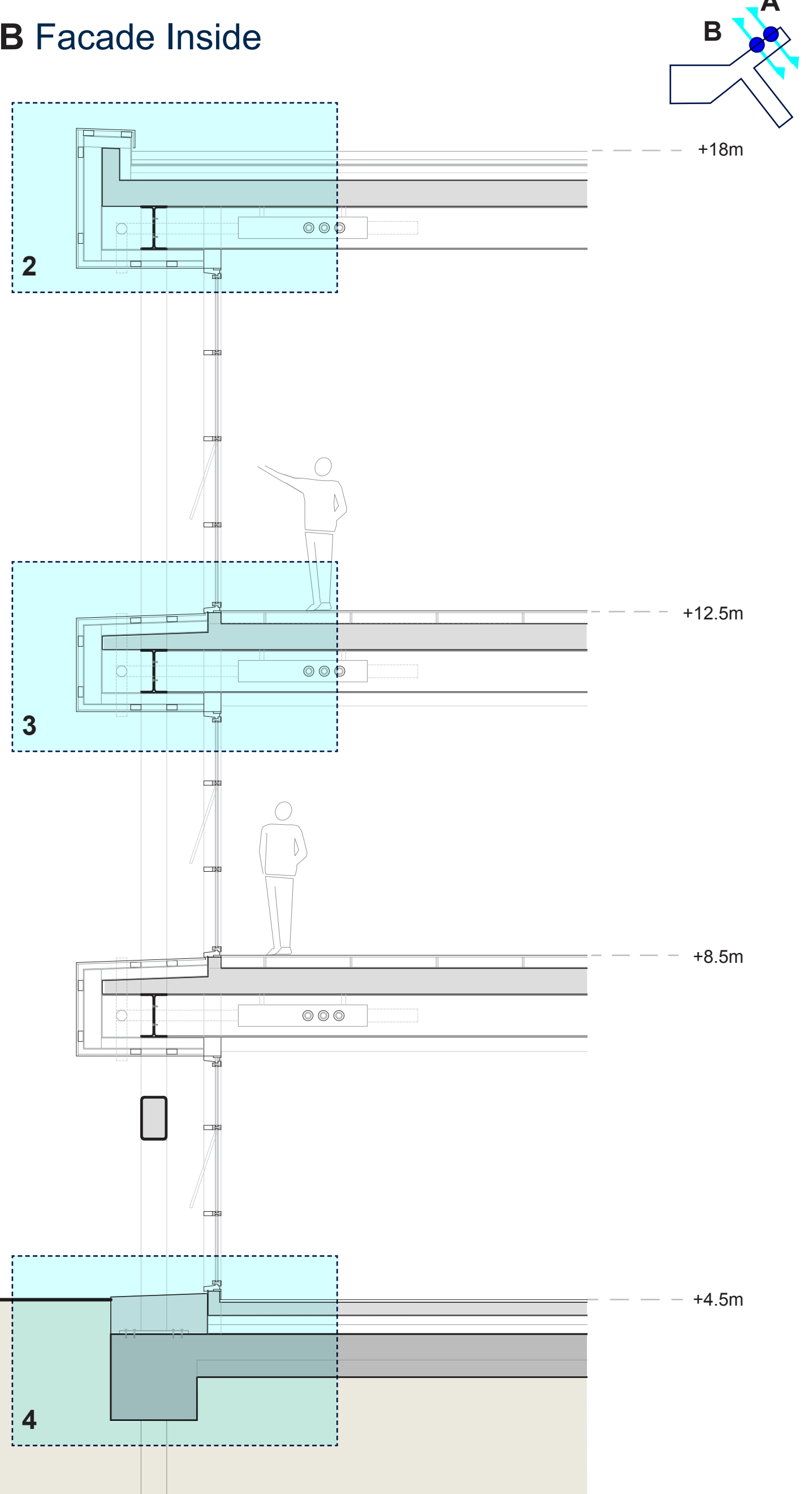
Scale: 1:50



A Facade Outside

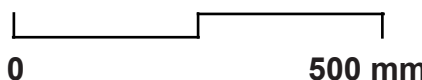


B Facade Inside

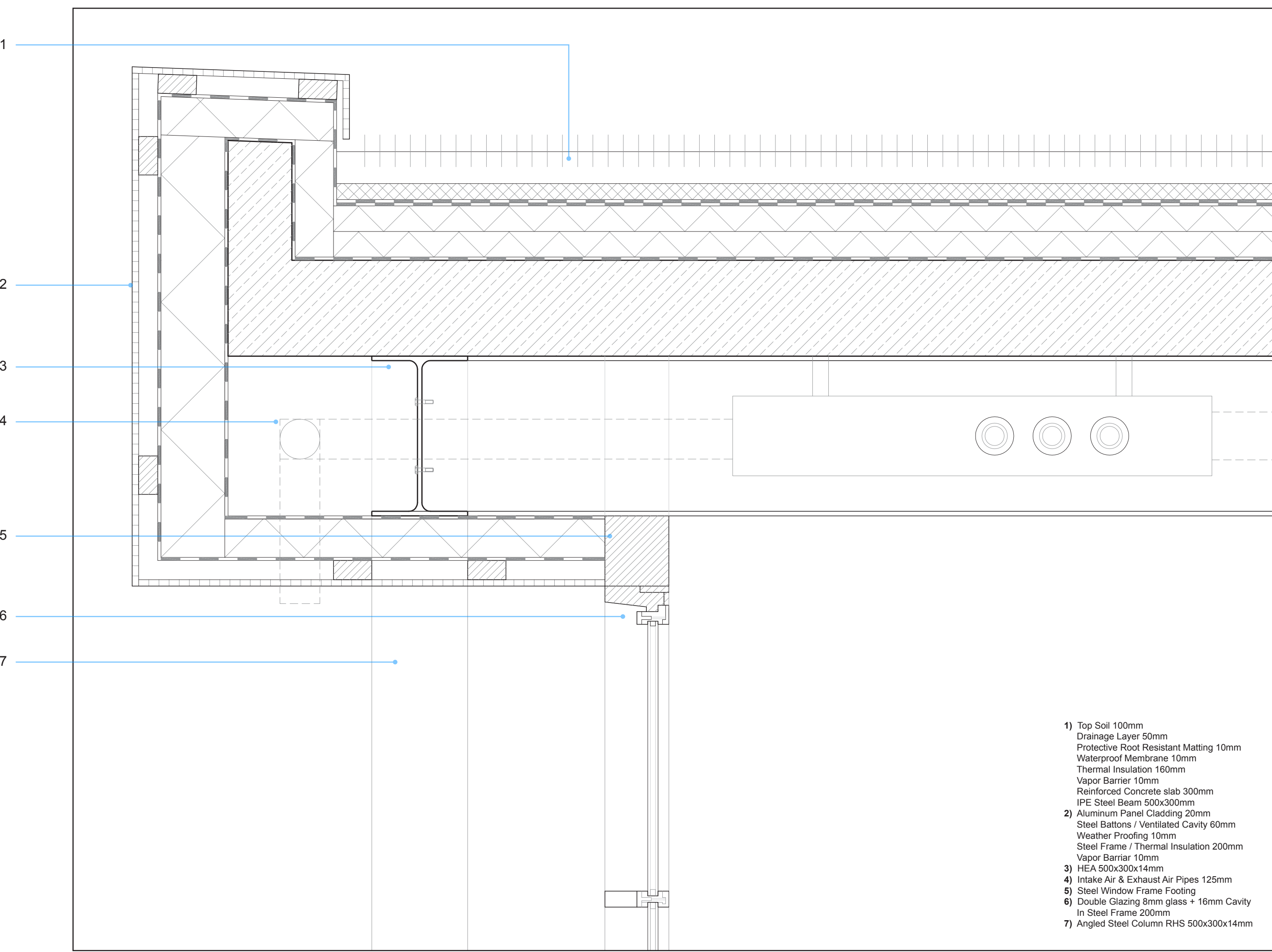


DETAILS

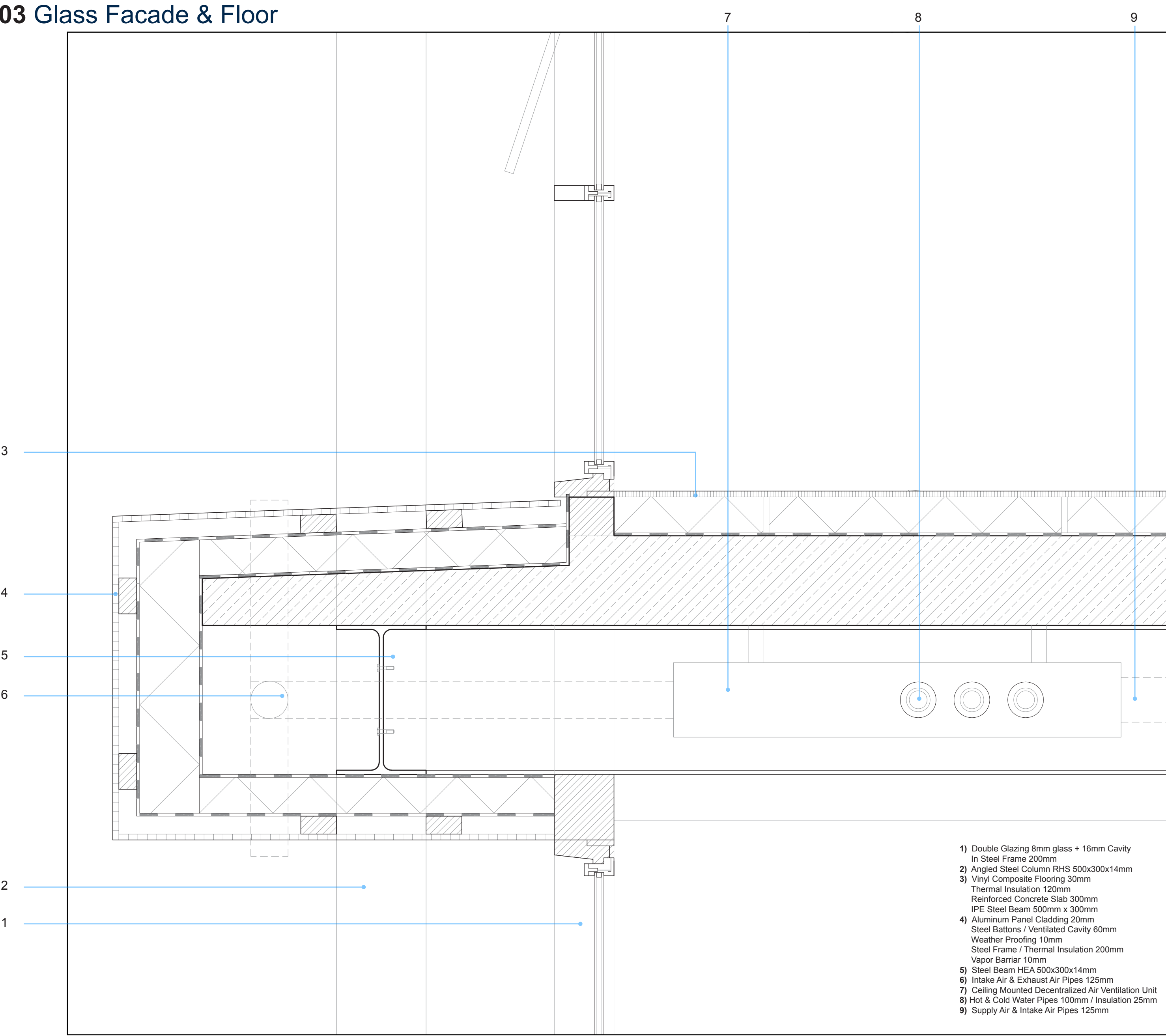
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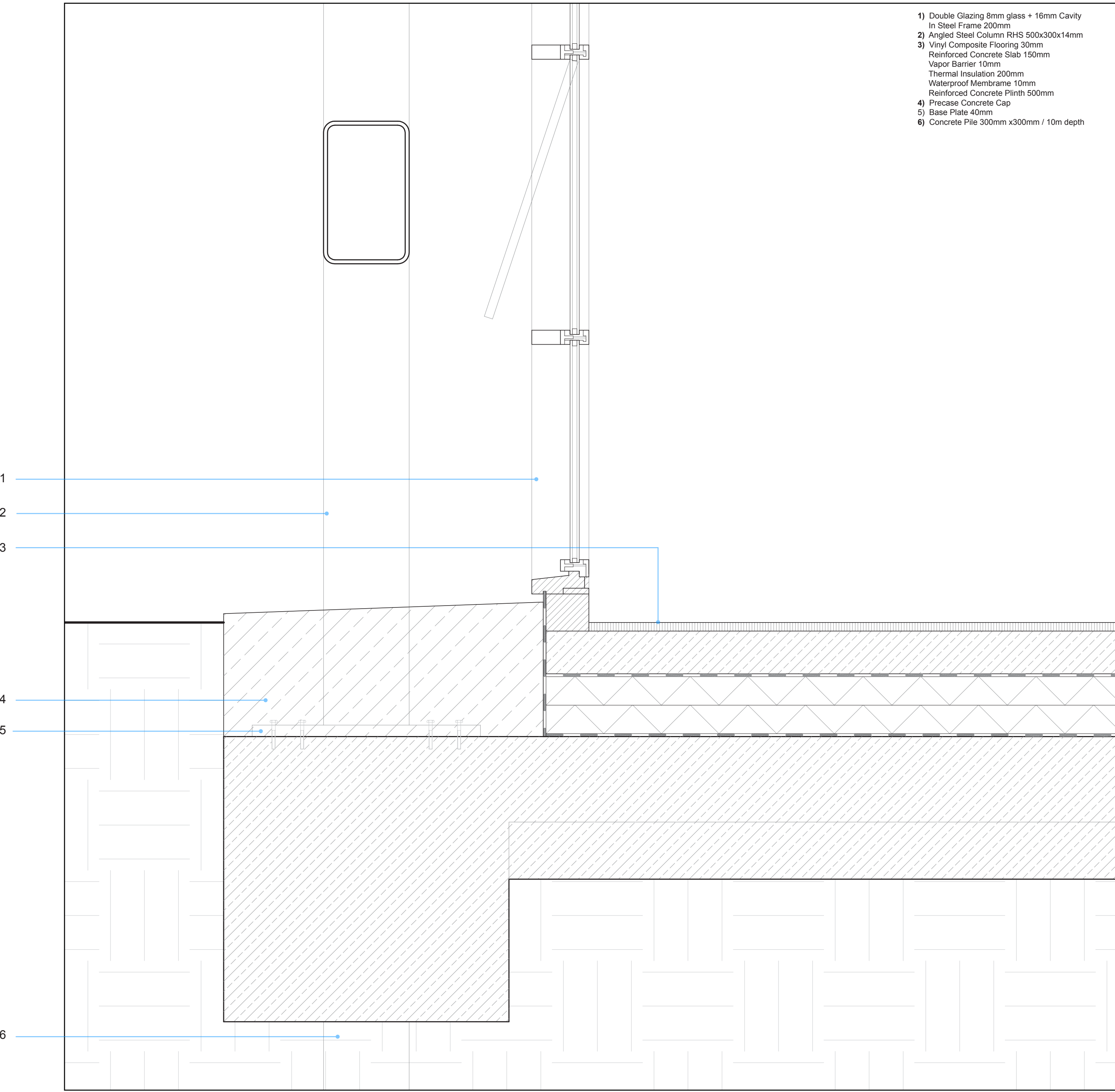
02 Roof



03 Glass Facade & Floor

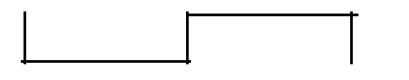


04 Foundation

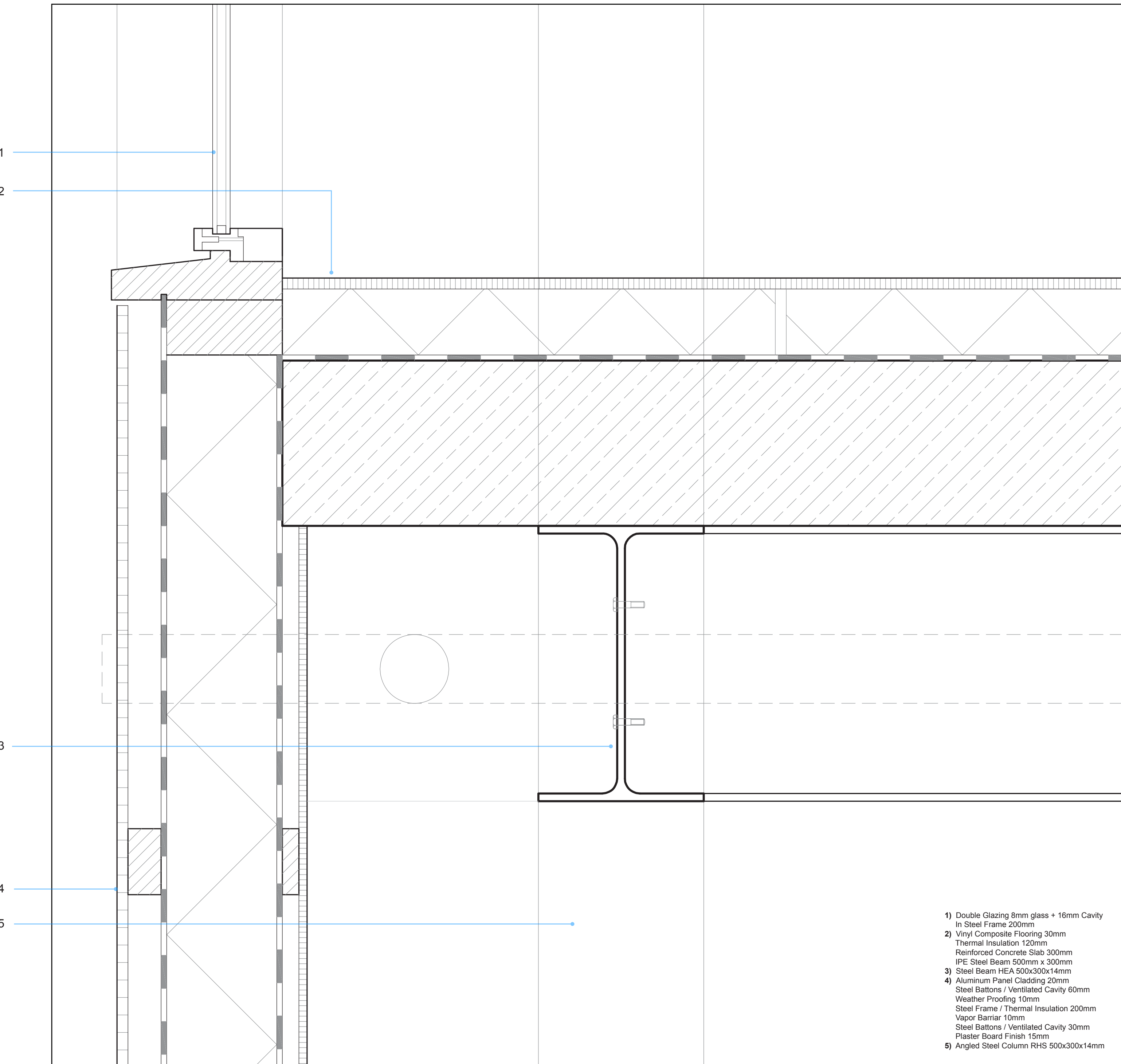


DETAILS

Scale: 1:5



01 Aluminim Facade & Floor



01 Aluminim / Glass Facade(Horizontal)

Scale: 1:10

